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FASHIONS OF THE DAY

IN

MEDICINE AND SCIENCE.

A FEW MORE HINTS.

BY

H. STRICKLAND CONSTABLE,

AUTHOR OF 'OUR MEDICINE MEN.'

"We doctors vacillate from one extreme to another, and seem to work in recurring circles."—DR. L. BEALE.

Zeit-geist—Fashions of the day.

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C H A P T E R I.

INTRODUCTORY.

I WILL begin this volume by repeating what I said in “Our Medicine Men,” that by “medicine men” I mean the modern developments of the savage’s “medicine men,” that is to say, our professors of the art of healing, of science, and of religion. These men may be divided again into Medicine Men who work, Medicine Men who write, and Medicine Men who talk. But this, like all classifications, is only for convenience, inasmuch as there are infinite varieties of Medicine Men and combinations of varieties dove-tailing into each other, some few combining in themselves all three varieties in about an equal degree.

The readers of “Our Medicine Men” will find in this volume sundry repetitions, but they are intentional. “The only oratorial figure,” says Carlyle, “that is worth anything for purposes of persuasion is the figure of repetition.”

I occasionally quote, but seldom exactly word for word, for I leave out the unnecessary ones. The curse of books is bulk.



CHAPTER II.

ABOUT SOME CRITICS.

SINCE "Our Medicine Men" was published, many criticisms upon it have been sent to me. I have been surprised at the good sense manifested in most of them, even down (as London journals, perhaps, would put it) to penny papers in country towns. It may, however, be doubted whether wisdom be so exclusively localized within the great metropolis as some of its inhabitants seem to think. Provincialism means narrow-mindedness arising from limitation of ideas to one type of mankind. The rural district has its narrowness, the country town has its narrowness, and assuredly the great town has its narrowness and special peculiarities also. In little things these last go by the name of Cockneyisms. Taking a larger view, this type of narrowness may be called metropolitan-provincialism. But whilst I have been struck by the good sense of most of my critics, I have also been struck by the folly of others. Indeed, this folly has amused me so much that, although I dislike talking about myself, I cannot think it would be justifiable in me to refrain from trying to share the amusement with my readers. He that knoweth the

thing that is entertaining and refuseth to impart it to his fellow-creatures, but selfishly keepeth it to himself, may call himself a Christian man, but of a truth he is little else than a benighted heathen.

First, then, I have been amused at sundry guesses on the part of a few of my critics with regard to the author of "Our Medicine Men." They have mostly been so ludicrously wrong. One man thinks I am some book-worm, who has passed his life filling note-books with extracts and anecdotes, and at last poured them all out and printed them. But I have not got a note-book, and, except for what I believe printers call "copy," I never wrote down an anecdote in my life. As to being a bookworm, I am a Yorkshire country squire, "qui gaudet equis canibusque," and my habits are the habits of my kind. I preserve game, hunt foxes, breed horses, fell trees, stub thistles, grow oats, love turnips, and glory in mangel-wurzel; and whenever one of my beer-loving neighbours is brought before me for being found drunk and incapable on the public highway, I forthwith devote my time and talents to the matter, and fine him five or ten shillings, as the case may be, without being paid a farthing by the country for doing so.

Another critic, a medical man who disapproves of my remarks about sundry ignorances and superstitions of the doctors, tells his readers that I was evidently in early youth one of those precociously clever children who grow up to be insufferable from not having been whipped when a boy. But this man, again, is ridiculously wrong. For instead of being a clever boy, who ought to have been whipped, I was *not* a clever boy, and I *was* whipped.

Many of my critics call the author a clever man. I do not consider it a compliment. "The cleverer a man

is," says Archbishop Whately, "the more harm he does, unless he has wisdom to match." Mere cleverness is a weed that in these days runs very thick upon the ground. "I," says Montaigne, "only desire to become more wise, not more learned or more eloquent." In fact, he did not care for the mere cleverness. Wisdom means a man being "all there" from bottom to top, that is sensuously, intellectually, morally, and religiously. Cleverness means some one faculty, such as for instance analysis, word-memory, calculation, or rhetoric, which is developed generally at the expense of the others. Thus if any critic wishes to please me, he may try calling me a wise man. I do not say he will succeed; for it perhaps will be only like the child who stroked the tortoise on the back in order to please it, or, as Sydney Smith put it, like stroking the dome of St. Paul's in order to please the Dean and Chapter. Still he may try; and I, on my part, will try to be pleased.

My medical critic evidently thinks that a writer against the holy rite of vaccination must be so diabolical that for Christianity to be in any way discussed by him, from the Christian point of view, is a sort of blasphemy; and then he quotes the old story of the drunken, swearing, English soldier, finishing an argument about the French invading England, by shouting out at the top of his voice, "Curse it all, sir, what I want to know is this. If the country is to be invaded by an infernal pack of —d Papists, what the — is to become of our holy religion?" Of course in this story the drunken, swearing soldier is intended to represent me. My critic tells the story, but does it so badly that the point is lost.

It is curious how incapable some people are of seeing the point in stories. A facetious man was once using a nutmeg grater. Another person—on Napoleon being

mentioned—said he was a great man. “Yes,” said the former, “he was, but this, holding up his implement, is a grater.” Not much of a joke, still people laughed. A brilliant man who was present bottled this up for future use, and one day, having provided himself with a nutmeg grater, led the conversation to Napoleon, got some one to say he was a great man, and then, holding up his implement, said “Yes he was, but this is a nutmeg grater.” I wonder whether this genius was my medical friend.

I am very sorry to say that I have something worse to tell of this medical critic. The poor man lies. It is very sad. It were better for a man that he should be blind, deaf, dumb, halt, and maimed, than be a liar. But he is one, and his lie is this. He says that I call such men as a certain Mr. Simon,* scoundrels.

Lies vary enormously. Indeed, strictly speaking, no two lies are exactly alike. Now the above lie belongs to the direct straightforward class. There is no hesitation, no beating about the bush, no admixture of even a particle of truth, no weak scruples, and no imbecile attempts at toning down the effect. Neither is there any of that verbal discursiveness one so often sees about lies. In fact, there is no extraneous ornamentation of any kind. There it is—a lie, *in puris naturalibus*, broadly, boldly standing out like a black pine on a mountain side, that has nothing but an expanse of bright, white sky behind it. The man also tells the same lie about a certain Dr. Budd,† whose head is so full of typhoid germs and minute organisms.

* Mr. Simon is or was a Government Medical Inspector.

† The general reader will never have heard of Dr. Budd. So I must tell them that he wrote a book, the moral of which is that filth, over-crowding, breathing impure air, sewer gases, &c., have nothing to do with typhoid fever, and that it only comes from drinking dirty water.

Dr. Budd also holds that typhoid fever never arises spontaneously—

Another complaint of my medical critic is, that in quoting I only give the names of the authors. He says I am not precise enough. But the names, even, are more than is necessary. Wisdom is just as much wisdom whether a name be tacked on to it or not ; and books are written to enlighten the unwise, not to satisfy the requirements of pedantic people. Of course I could have been more precise, and to many a one of my quotations added chapter and verse, page and line, date of publication, name of the publisher, birth-place of the author, colour of his hair, height in his stockings, circumference round the middle, the curvature in front, and breadth of view behind. But my book is too bulky already ; what would it have been then ? In book writing, the greater the number of unnecessary particulars the fewer the readers.

Again, this man thinks nothing of a writer whom he supposes to get his quotations second-hand, as he calls it.

it always comes from imbibing with pump water germs of the disease from another person—this person again from some one before him, and so on. How, then, did the first case in the world arise? Typhoid disease means disorganization of a certain portion of the internal machinery, which machinery we will call by the general term “stomach.” Then where did the first stomach get it? Manifestly, the only logical conclusion is that the stomach-ache was created before the stomach.

“When God made de fust man,” said a negro preacher, “he set him up against de wall to dry.” “Who made de wall?” cried out one of his black hearers. “Put dat dere nigger out,” shouted the preacher, “such questions as dat 'stroy all de theology in the world.”

Miss Nightingale, a woman of strong original force of mind, immense experience, and no professional bias, says, that any and every variety of the zymotic diseases constantly arises spontaneously, and merges into one another in consequence of breathing air that is impure from over-crowding. Dr. Budd's argument seems to be as follows. Here is A down with the fever. How did he get it? Then he makes inquiries and finds he has been drinking pump water. Ergo, the water imparted the disease. But everybody drinks pump water.

I wonder what he would call first-hand. Bacon, Rabelais, Seneca, perhaps. But what are they? Three mushroom writers, who have sprung up the last thousand or two years, every one of whose ideas came to them in ways innumerable — many, perhaps, from those Hebrew writers of whom King Solomon said that in his time there was no end, whose ideas, in their turn, may have come from races of men who inhabited our earth millions of years ago, where the north or south poles now are. Every thought has its father and mother, brothers and sisters, uncles and aunts, cousins, relations, and ancestors, without end and number. "Ideas," says M. Doudan, "enter one's mind by a thousand different ways, and under as many different forms." Each old idea is modified by each new mind it enters, but the idea will generally essentially be an old one. "All truths," says Goethe, "are old, and all we have to do is to recognize and reproduce them." Some of us in these days think ourselves very original geniuses, but our original ideas are mostly old as the hills. To give one instance. There is many a second and third class politician of the day who evidently thinks we are on the eve of the millennium, in consequence of the *new* doctrine of compulsory education. But we learn from Dr. Deutsch that amongst the ancient Jews universal compulsory education was carried to a degree of perfection of which we in these days have no idea, and that after this perfect system had been in work two or three hundred years, the whole Jewish nation came to the most fearful destruction that has ever been recorded of any nation within historic times. Perhaps the education had nothing to do with the destruction. Human life is infinitely complex. So causes are usually inscrutable. Still the fact remains.

A wise man values wisdom wherever he finds it. A

pedantic or stupid one has first to learn where it comes from. My medical critic is like the old Yorkshire labourer I once, on my return from hunting, asked to tell me the way to York. Hodge stared, gaped, scratched his head for about two minutes, and at last said, "Where did ye coom from?" But the question was which way I was to go. What could it signify which way I had come.

I entitled my book "A Few Hints." Each subject I headed with the words "A hint or two" about it. Then comes my medical reviewer and complains that I prove nothing—that there is no rigorous logical demonstration. He is like the man who came on his friend's invitation to drink a bottle of Johannisberg, and then said on tasting it, "Why what's this stuff? I thought you would give me gin and bitters."

Strict, logical demonstration proverbially convinces none and bores all. Therefore, strict, logical demonstration is unjustifiable. Father Newman shows in "The Grammar of Assent," that mere logical demonstration never by itself produces real belief, that is, belief that produces action, but that it only tickles and satisfies that small bit of human nature, the logical faculty.

Finally, my critic's remarks are manifestly inspired by temper. This is very foolish, for it destroys all chance of arriving at correct judgments even where there is a wish to do so.

I will now give this poor man a little advice, for I wish him well, as I do everyone else.

(1) Avoid attempts at humorous writing. Humour, as opposed to wit, is said to require a certain loving kindness of disposition. You might try wit. I do not think it would come to much. Still you might try.

(2) Shun pedantry, as I hope you do the devil and all his works, for it is one of them.

(3) Learn truth, then you will be able to tell it, supposing, that is, it is your wish to do so.

(4) Avoid anecdotes, for you do not know how to tell them.

It may, perhaps, be thought a waste of time taking notice of foolish criticisms, but, besides the amusement it may be to somebody, a wise man attends to any criticism, for no one can tell where he may not learn something.

"If a man," says Mortimer Collins, "could get the opinions of his horse and his dog, his ox and his ass, it would be worth his while to listen to them." "I am much obliged," he goes on to say, "to anyone who criticises me as savagely as he likes, so long as he puts a little intelligence into his criticisms. And none of my critics need fear an action at law, even should he declare that I murdered my great grandmother."

I could, of course, give the name of the medical journal which published the above foolish remarks about "Our Medicine Men," but I should be sorry to expose the foolish writer of them, who may be some young doctor, struggling to get on, and trying to pick up an honest penny by doing odd jobs with his pen. I only write all this to entertain or instruct my readers. To give the name, even if I knew it, of this man, would instruct no one. I say that his remarks are inspired by temper, the fact being that I have found it my duty to animadadvert rather strongly upon sundry medical superstitions of the day.

It has always been a great amusement to me to watch the working of the human mind and trace out motives and biases. So, on the chance of its amusing others also, I will give my readers another instance of apparent bias.

"The Graphic" calls "Our Medicine Men" a clever volume, "full of pungent criticism; instructive and amusing."

"The Watchman" says of the book, "There is scarcely a page which does not contain something worth reading and remembering."

"The Irish Times" calls it "an extraordinary production, the work of a very clever and original mind—thoroughly entertaining," &c.

"The Nonconformist" says, "Seldom have we read a fresher book. If only for its anecdotes and quotations it is worth reading, but it is still more so for its vigorous and independent thought."

"The World" says of the author, "He is evidently a man of very wide and varied reading and of much intelligence and culture."

"The Sheffield Daily Telegraph" says that "'Our Medicine Men' is original to a fault, highly entertaining, and a perfect mine of excellent suggestions."

"The Hampshire Telegraph" says of it, "This is one of the most amusing books, apart from its serious intention, we ever read—underneath the humour there is evidence of great thought, much research, and no little argument." Then, after quoting a sentence from the book, it says, "this is strong language, but in the face of death and horrible sufferings alleged to be traced the other day in the case of two children to the vaccination lymph, nothing can be too strong."

"The Cosmopolitan" talks of "the volume from the gifted pen of H. S. Constable, containing more wit, wisdom, common sense, and sound philosophy than we have found between two covers for many a long day."

"The Standard" calls "Our Medicine Men" "a very curious book," and says it is "a book to be read whether

one agrees with it or not. It is the work of a well-read and undoubtedly very clever man. His remarks are always fresh, singularly suggestive, and very often admirable."

The "Eastern Morning News" says "the book is well worth reading and possessing."

"Public Opinion" calls the author "an admirable humorist," and then says, "We can safely promise our readers much amusement of a thoroughly amusing kind and a great deal of instruction in Mr. Constable's 'Few Hints.' They are all thoughtful utterances. However comic the anecdote, it is always judiciously applied." And again, "in his fierce but not ungenerous attack upon those of our medical men who defend vaccination Mr. Constable is well armed with an infinite variety of weapons, all of which he uses freely and with singular success, but he does most execution with ridicule. He is constantly laughing at his opponents, and so infectious is his genial humour that the reader finds himself disposed to join in the laugh. Not content with original stories, this admirable humorist has brightened up a number of old anecdotes, which he uses with excellent effect. The volume is modestly called 'Hints.' Medical men will be more apt to call the hints stings if they possess sensitive souls."

And now we come to one of those little touches of human nature that, to a human-nature fancier like me, are always so interesting to recognize.

"Our 'Medicine Men,'" says the "British *Medical Journal*," "is a bulky but trashy production by a person who confounds maundering with thought and drivelling with ratiocination. It aims at being philosophical, but is in fact childishly nonsensical from beginning to end."

I must here say that I have never written anything

with the intention to "sting" or hurt the feelings of anyone. My object has been to instruct doctors, not to sting them, and I have instructed them—that is those who are capable of being instructed. Truth told must tell somewhere. As to my ridicule, it has been ridicule of ridiculous medical superstitions more than of the men who hold them. We most of us have our foolish beliefs about something or other, and every profession has its weak places. I dare say, if I had been a doctor, I should have been as bad as any of them.

I now come to a short notice of "Our Medicine Men" in "The Church Times." I should not mention it, only I think I see my way to giving the writer a little advice that may be useful to him. He talks of my introducing into my book *paleontological* jokes. Now this is bad taste, he should have said *old* jokes. Good writing means simplicity in writing. Of course I use old stories for illustration when I can. Unfortunately my memory for such things is so defective, that I have often had to invent new ones; but I suspect they are seldom as good as the old ones. I wonder what sort of spade my critic of "The Church Times" uses when his early potatoes want digging up. With his principles, I suppose he will not use a "paleontological" one, however good it may be. Probably he buys a fresh spade every time. But it must come expensive. Or perhaps he invents new and very unsuitable implements. I can fancy him in his rural retreat, after his critical labours in town are over, enjoying his *otium cum dignitate* (or as Canning put it, his *otium cum digna taty*) with some preposterous contrivance of his own in his hand. Still I think that he would get on better with the old ones.

A writer in the "Pall Mall" has amused me. If there is any truth in the proverbial saying that Scotchmen are

deficient in humour, this man must be one, to judge by the way he mistakes an attempt of mine to share a little "chaff" with my readers for "pathetics." A cultivated Irishman makes the best critic, for he has a pliable and sympathetic mind, which can at any rate understand things out of its own groove. The Irish critic is like a ferret which twists in and out of all the windings of the rabbit hole, and at once finds out all about it. Whereas the Scotchman, with all his strength, is like a hedge-stake, which sticks fast at the first turning. A man's knowledge and intelligence depend upon the sympathy that is in him. If he has none, he is a fool, let his reasoning power be what it may. "There is no escaping the fact," says George Eliot, "that want of sympathy condemns us to corresponding stupidity." If the editor of the "Pall Mall" will take my advice, he will send back his Scotchman to his native hills, and get a Paddy from Cork in his place.

One of my critics is my friend, Dr. Allbutt, of Leeds. He writes to me, and says, that although "doctors disagree," it is only about small things. They are all agreed about the great ones. All important questions, he tells me, are settled.

How is this?

A doctor told me a few months ago, that during his thirty years' practice, the whole mode of treating diseases has changed three times. First it was violent bleeding, drugging, and blistering ; then it was "building up" with stimulants and strong foods ; and thirdly, it has been leaving things to nature, or the "do nothing" system. What will it be next, I wonder ? We have had hydrotherapy, or making clean the outside of the platter, perhaps we shall next try making clean the inside. Indeed, I read only the other day what professed to be a new and

sure way to cure all maladies that flesh is heir to. I am inclined to call it the "flushing system," for it seems to be on the same principle as flushing sewers. The plan was to pour down people's throats as much water as they will hold, then pump it up again with a stomach pump, then pour in more, pump it up again, and so on till the inside is clean and bright as a new shilling. I wonder whether this is to be the next thing. Men (say the scientists) have lived on this earth millions of years. During all this period treatment of disease has confessedly been totally wrong; but now (say the doctors), dating from four or five years back, the right modes of treatment have at length been discovered. Of course this may be true, only doctors of all ages have thought the same about themselves, each in his own time.

"Surely doctors," says a writer in a country newspaper, "surely doctors are a little too dogmatic, seeing how often they change their opinion. Twenty-five years ago, fever patients were treated with enormous quantities of alcohol; at the present time it is scarcely used at all. Formerly, again, in delirium tremens the rule was "a hair of the dog that bit you." The patient, it was supposed, must die if he were not liberally supplied with the very thing that had caused his complaint. All this is changed now. Then opium became the favourite remedy; yet now we learn from "*The Lancet*" that opium is to be discarded as being highly dangerous, and that the proper remedies are foxglove and cayenne pepper, or to use the technical terms, tincture of digitalis to quiet the heart, and capsicum to allay the craving of the stomach."

The fact is doctors disagree without limit, and they will often even quote the same cases in support of their different views, like Dr. Budd, who quotes outbreaks of fever at Clifton, in 1858, to prove that typhoid fever only

comes from germs of the typhoid parasite from some fever patient, whereas Mr. Wolff quotes the same outbreak to prove that typhoid does *not* come from the germs. But, besides this, their differences about simple matters of fact are everlasting, as, for instance, where Dr. Hallies tells us that in scarlet fever the blood is full of a wretched little creature, called "micrococcus," whereas Dr. Sanderson says there is nothing of the kind. Indeed, when we consider that every doctor has a different mind from every other doctor, and every patient a different constitution from every other patient, and every drug acts differently upon every different constitution, the wonder is they ever agree. I read one day about a man so afflicted by rheumatism that he consulted doctor after doctor, and in a very short time learned that he would be cured by iodide of potassium, quinine, salts, onions, lemons, Turkish baths, gin and tansey, hot water, cold water, a trip South, a bracing Northern climate, a dry air, a damp atmosphere, sulphur baths, mustard and water, camphor liniment, and electricity.

I am really afraid that Dr. Allbutt is in error when he tells me that doctors are agreed on all important points. Indeed the contrary is proverbial. One can hardly read a newspaper without seeing some story to illustrate it. I found one only two days ago. A gouty man was explaining to a friend that his doctor did not permit him to take sweets, potatoes, fruits, farinaceous food, vegetables, ale, beer, or wine. "Then why," asked his friend in astonishment, "don't you get another doctor?"

To return to my critics.

One critic tells me I am not solemn enough when I write on religious matters. How curious are the ideas of many excellent people about this. They seem to think that at the approach of "religion" a man must at

once become "like the hypocrites, of a sad countenance." Perhaps it is partly some strange remains of the days of violent Calvinism, when "religion" meant "the greatest damnation to the greatest numbers." The wonderful Bible contains *all* human nature, wit and humour included. Job, talking of his enemies, does not prosaically call them asses, but he puts it wittily and says, "under the bushes they brayed." Elijah, ridiculing the idolatrous priests and prophets of Baal, who are clamouring to their God to help them, says, "shout louder! He is a God, you know; make him hear! Perhaps he is chatting with somebody, or he is off on a hunt, or gone travelling. Or may be he is taking a nap. Shout away! Wake him up," &c. In fact, he chaffs them with much humour.

Charles Kingsley believes humour to be one of the attributes of the Deity.

One or two critics call "Our Medicine Men" a book of many crotchets. Now, however free from vanity one may be, this cannot but be gratifying to an author's feelings; inasmuch as Mr. Mill says that the crotchet of one generation is the truth of the next. Of course this only means that all truths are at first called crotchets; not that all crotchets are truths, for they are often in the highest degree untruths. Still, if an angel from heaven came down to instruct the people who walk on the earth, his teachings would be called crotchets, and quite right, too, as men are made. Mankind would do very badly without this Conservative principle to balance the Radical's belief in new ideas, only because they are new, and hatred of old ideas, only because they are old.

One critic, who writes in the "Illustrated London News," complains, poor man, that he cannot understand what I have written. Then, for goodness' sake, why does he not go to something easier? There are books

written for everybody. Montaigne says that if in reading he came to something he could not understand, he always carefully perused it once more, and then, if he still could not understand it, he went to something else. In this way he escaped wear and tear of mind. I wish my reviewer would try this plan, for what should we all do if his mind were to wear out ?

A critic in a Glasgow newspaper complains that I do not write on sufficiently interesting subjects. Now, the subjects I do write about are health of body, health of mind, politics, science, and Christianity. And these are not interesting subjects ! I wonder what he wants ! And yet I fancy I can guess what he wants from something I once read in Sydney Smith's life. Writing in his later years about Scotland, he says that he once spent a few weeks in Glasgow, but all that remained on his mind was "a confused recollection of oatmeal, cotton, itch, whisky, and metaphysics, or metapheesics, as they called it." But I do say something about metaphysics in my book, so I suppose what my Glasgow critic wants is something about oatmeal, cotton, whisky, and itch. Well, I like pleasing people as far as in me lies, so in my next edition I will see what I can do for my Glasgow friend. But it is not always easy to find out what interests people, although I hope I have succeeded in this case. Sir W. Scott tells us that once in a stage coach he found himself alone with a stolid-looking man, who certainly did not look promising as a companion. However, Sir Walter set to work, and patiently tried him upon every subject he could think of. But it was all in vain. At last he said to him, " My friend, I can do no more, so will you be so good as to inform me if there is any one subject in the whole world that interests you ? " Upon this the man looked up, and said, with a grin, " Can ye tell me

onthing clever aboot raw hides?" The fellow was a tanner.

The late Sir Tatton Sykes used to tell a story of how he was once at a dinner-party in Hull, where there were some flax-merchants. When the ladies had left the room, and after these men had drawn their chairs round the fire and got together the bottles of wine, one of them said, "Now, let's be jolly, and talk about flax."

Critics seem to differ as much as doctors. For instance, one critic says, "'Our Medicine Men' is very entertaining, but there is too much in it about vaccination." Another finds fault with the author because he introduces "a large amount of matter that has nothing whatever to do with vaccination."

Who shall decide when critics disagree?





CHAPTER III.

ABOUT VACCINATION.

ONE of my critics says I do not give statistics enough against vaccination. But a proverbial saying says, "Nothing is so fallacious as figures, except facts." This means what is undoubtedly true, that ingenuity can twist the same statistics to tell for either side of a question. Reliable statistics may be useful to produce conviction in an unbiassed mind, but they are helpless where the mind is biassed. And what mind is unbiassed? Still some people are never satisfied without statistics, so I will give them a bit or two to please them, but it will be no use. If a man (as men run) were brought up and lived till middle-age in the belief that wolves are strict vegetarians, no amount of statistics would teach him the contrary. Harvey said that no physician above forty years of age could be got to believe in his discovery of the circulation of the blood.

My first bit of statistics, then, about vaccination is as follows :—

The directors of the Austrian State Railways have under their control a population of *employés* and their families numbering about 60,000 souls, whose health

is superintended by eighty medical men. The directors issued a circular requesting these medical men on their honour to fill up, without prejudice or partiality, certain printed forms respecting the small-pox epidemic of 1872, 1873, and 1874. The report from the head physician, Doctor Kellor, is as follows :—

Of children under one year old the mortality of the vaccinated was 48 per cent., of the unvaccinated 45 per cent.

Of children between one and two years the vaccinated died at 46 per cent., the unvaccinated at 41. Of those above two years old the mortality of vaccinated and unvaccinated was about equal.

These statistics show that vaccination had no discoverable effect one way or the other. Still, this is not the conclusion people will come to. Opponents of vaccination will prove from them that the vaccination increased the mortality, whilst the doctors will prove from them incontrovertibly that they settle the question in favour of vaccination for ever and ever.

Another bit of statistics :—

In Birmingham, from 1871 to 1875, there were 1270 deaths of people from small-pox, of whom 840 had been vaccinated. For having vaccinated these people to ensure their not taking small-pox, the Birmingham Vaccination Officer was paid during five years 1156*l.* in addition to his ordinary fees. "Doctors," says George Dawson, "are paid to vaccinate, paid again a bonus for doing it well, and paid again for attending to the sickness produced by this blood-poisoning." "When will people see," he goes on to say, "that vaccination is unnatural, sinful, filthy, and dangerous—and that doctors are blinded by self-interest and professional pride from admitting themselves to be wrong, so long as it *pays* to do wrong?"

Another bit of statistics provided by the doctors themselves, and undisputed.

Of those who died of small-pox during the last epidemic, more than eighty out of every hundred had been vaccinated. Any man whose opinions are under the influence of reason, on learning this of course at once says, "Then there is an end of vaccination. It is a failure." But he is wrong. The doctors go on cowpoxing just the same as before. The knowledge of the failure *has not made the slightest difference*. "Then the doctors," he will say, "must be a stupid, uncultured, and reasonless class of men. Again he will be wrong. The doctors are as intelligent, as cultured, and as educated a class of men as any other. The mistake is in supposing the world to be ruled by reason, when in fact it is ruled by nothing of the kind. These doctors are like a man I knew whom we will call Robson, although this was not his real name. Robson and Dobson were great friends though of opposite politics ; and Robson, who was a Tory, having got it into his head that his friend Dobson had been voting for the Radical candidate at an election, wrote him an indignant letter at his doing so unfriendly a thing. Upon this, Dobson sent back a "soft answer," under the hopes that it would "turn away his friend's wrath," and explained to him that he certainly had thought of voting for the Radical, but thinking it might annoy his friend he abstained from doing so. But this explanation did *not* turn away Robson's wrath. *It did not make the slightest difference*; and Robson never spoke to Dobson again as long as he lived. Now it may be said that Robson must have been some vulgar, uncultured, reasonless person. But he was nothing of the kind. He was a very cultured person, a member of Parliament, and the clever, highly-educated son of a clever, highly-educated

father, the Duke of ——. The truth, I repeat, is that reason does not rule mankind, and perhaps rightly, for reason being not a motive power, but only a regulating, directing, and checking one, men, if too much under its influence, would only think, criticize, analyze, and doubt, but never act. They would not live, but only reason about living. Thus it is, that a deliberative or debating assembly and the executive part of a government have to be separated. The former, though wanted in its place, is no use when there is anything to be done. It only hampers and obstructs.

“When,” says Professor F. Newman, “97 per cent of Londoners are vaccinated, yet small-pox makes deadly outbursts there, a mere child may see that vaccination is a wild folly, which the next generation of medical men will hoot out as this generation has hooted out inoculation so beloved of the faculty.” True of course, but new ideas require generally a new generation to take them in.

The above statistics about vaccination no one has ever disputed, but I fear we cannot always say this of the statistics provided for us. For instance, one argument of the doctors is that vaccinated nurses at small-pox hospitals never take the disease. Now, in the first place, that would prove nothing even if it were true; and, in the second place, it is not true. The ‘Pall Mall Gazette,’ in April 1877, records three cases of small-pox amongst nurses who had not only been vaccinated, but revaccinated. The statistics of a partisan are—I was going to say worthless as the paper they are printed on, but I mean far more worthless—waste paper lights fires.

Bias, whether conscious or unconscious, destroys trustworthiness. Mr. Splint is a horse-dealer—a very respectable man, who goes to church with his wife and six children twice every Sunday; but his statements some-

times indicate bias. One day he told Mr. Green that a horse was rising five years old, sound wind and limb, and had every virtue under the sun. Mr. Green bought the animal, got him home, and found that the creature had one foot in the grave from old age, was lame of the other three, wrong in his wind, blind of an eye, and a confirmed kicker. This is no doubt an extreme case of bias; but extreme cases sometimes suit best for illustrations.

Here is another bit of doctors' statistics.

Dr. Corfield (as reported in the newspapers) stated at St. George's Hall that the French soldiers practise vaccination and revaccination, and that consequently, although epidemics of small-pox are frequent in Paris, there has been no case of it in the Parisian Guard for seventy years. But upon inquiry from a French army surgeon it turned out :—

(1.) That small-pox epidemics are not frequent in Paris;

(2.) That although every French soldier is vaccinated and revaccinated, the mortality from small-pox in the French army during the epidemic of 1871 and 1872 was terrible;

(3.) That there is no such corps as the Parisian Guard.

This is like the cattle-doctors during the rinderpest, when they were at their wit's end to prove that the disease came from abroad. They stated :—

(1.) That the first cases of diseased cattle were imported from Russia by railway into Revel.

(2.) That rinderpest was raging at Revel.

But upon inquiring it turned out :—

(1.) That there had been no rinderpest at Revel.

(2.) That there was no railway into Revel.

Of course, I do not accuse Dr. Corfield of an *intentional* misstatement. False statements are constantly

being made in perfect good faith. The game of Russian scandal shows how a story after having passed through half a dozen mouths is usually so altered that no one would know it to be the same.

To give an instance :—

- A. tells B. a sad story of how a big black dog killed a poor little white cat.
- B. repeats the sad story to C., and relates how a big black dog killed a poor little black cat.
- C. tells D. that a big white dog killed a poor little black dog.
- D. tells E. that a big white cat killed a poor little black cat.
- E. tells F. that a big white cat killed a poor little white dog.
- F. tells G. that a big black cat killed a poor little white dog.

Thus in only six repetitions the story has got turned completely topsy-turvy.

Now this sort of thing is always going on everywhere, so we can easily imagine how the statement that "the mortality from small-pox in the perfectly vaccinated and revaccinated French army in the years 1871 and 1872 was terrible," might, after very few repetitions, be converted into the statement that "there have been no cases of small-pox in the perfectly vaccinated Parisian Guard for seventy years." And when we know that to the first of these statements the ears of every doctor would be deaf, whilst to the latter one the ears of every doctor would be open, such statements as that of Dr. Corfield become completely accounted for.

When a statement accords with a man's preconceptions and wishes he swallows it whole on the spot just as a boa constrictor swallows a rabbit ; and they both do it

not because they have employed reason or intelligence upon the matter, but because it is their nature to do so.

Here is a bit of statistics verified at Somerset House (Feb. 13th, 1877) and admitted in Parliament by Mr. Sclater-Booth.

Vaccination to prevent small-pox epidemics was made compulsory in 1853. Since then we have had three epidemics of small-pox, each more fatal than the preceding one. In 1857 there were 14,244 deaths, in 1863 there were 20,059, and in the 1870 epidemic 44,840. Of those who died about nine-tenths had been vaccinated.

Another bit of statistics.

Between 1841 and 1871 the public vaccinating officers received out of the rates 1,647,000*l.*, leaving out the enormous gains from private vaccination.

Sir Thomas Watson tells us there are nine zymotic diseases, plague, small-pox, measles, scarlatina, typhus, typhoid, cholera, chicken-pox, and mumps. Many doctors are hoping to find some compulsory operation answering to vaccination for each of them. Nine times 1,647,000*l.* comes to 14,703,000*l.* Add the private practice, and we come to a tidy little sum for the British medical pocket.

A different compulsory operation for each form of disease ! ! ! ! This, I say, is what some doctors are now hoping for.

Doctors of each period of time are certain that they have at length arrived at truth, and yet, though men have lived on the earth hundreds of thousands of years according to our geologists, it is not one hundred years ago that decoction of turmeric was prescribed for jaundice because both are yellow, decoction of red roses for loss of blood because roses and blood are both red, and scarlet bed-curtains for scarlet fever because both are

scarlet ; and the men of that day were convinced they had reached truth at last. But vaccination and inoculation—that is giving a person a disease in order to prevent him from taking it—belong to the days of turmeric for jaundice, roses for loss of blood, and scarlet curtains for scarlet fever, and now these astonishing doctors are looking forward to some operation analogous to vaccination for each of the other forms of zymotic disease. “ There’s a good time coming, boys ”—Dr. Ross, in so many words, expresses a hope that we shall shortly have inoculation from some animal for scarlatina. Well, perhaps we shall. We go to a cow to save us from small-pox, what animal shall we go to for charms against scarlatina ? How about a fox ? it is a red animal. It will, perhaps, do for measles too. Whooping-cough is like a dog’s bark, so I should think a dog will do for that complaint. The name chicken-pox speaks for itself. Typhus and typhoid begin with T, so perhaps a tom cat would do ; and frogs puff out their cheeks, so they must surely be made for mumps. All this will be called folly, but the doctors began it by going to turmeric to cure jaundice, to scarlet bed-curtains to cure scarlatina, and to cows and glandered horses to save us from small-pox, and after that nothing can be folly. Herod might be out-Heroded, but I cannot pretend to out-Herod the doctors.

“ The origin,” says Dr. Whalley, “ of the vaccination lymph is the greasy heels of a diseased horse.” “ I have,” he went on to say, “ been a public vaccinator for eleven years, and have vaccinated at least 11,000 children, and I have known syphilis introduced into scores of families by the disgusting operation.”

Three hundred years ago witchcraft reigned. It was the creed of all, from bishops and judges down to

scavengers and scullery-maids. But witchcraft died out, and then came what may be called a sort of modified witchcraft, when charms, amulets, nostrums, powdered toads, "a hair of the dog that bit you," "a strand of a rope that hanged a man," and other such remedies were believed in by all. This era lasted till fifty years ago, and to it belong inoculation, vaccination, and the old doctrine that "the more violent the remedy the surer the cure;" and the slaughter from bleeding, blistering, drugging, and every description of torture, must have been fearful. Sir Jonah Barrington gives us a marvellous description of torture for a bruised back in those days. Tom White, a whipper-in, had a fall which hurt his back; so he was subjected to the treatment of the day. After being stripped, he was strapped face downwards on to a kitchen table, so that he could not move. Then the surgeon "ran his enormous thumb from top to bottom of the spine with great pressure, and whenever Tom roared loudest he marked the spot with a lump of chalk." Then he kneaded the tender places with all his force just, as he said, "to settle the joints even." The next process was to draw parallel lines with chalk down the spine, one on each side of the backbone, making at every tender place a cross stroke; so that Tom had a complete ladder delineated on his back; and now "the decks were prepared for action."

First the doctor burned deep lines with red-hot irons slowly and carefully along all the chalk marks, Tom of course shrieking all the time fearfully, but quite helpless. The next process was to plaster into the grooves made by the firing, a mixture of boiled pitch, wax, mustard, resin, Spanish flies, spirits of turpentine, onion juice, and whisky; and before the mixture cooled the operator dotted it over with short lambs' wool, as thick as it

would stick ; then came another coating of the mixture, then more lambs' wool, and so on till the substance was an inch thick. On the top of all a deal board was fastened with bandages and nails, and Tom was released. We are told that the patient's tortures had scarcely begun yet, and that the next ten days the pain drove him mad, so that he had to be tied to the head of the bed, &c. The whipper-in survived the injury to his back, and, most marvellous to relate, he survived the doctoring also. All this took place during the life of Jenner, the originator of vaccination. In fact both the one and the other belong to the same era in the history of medical practice.

No one denies that different forms of epidemic are rife from unknown causes at different times. Dr. G. Wilkinson, laughing at the statistics in favour of vaccination, gives us a doctor's catechism :—

Question. When the country is free from whooping-cough, what is the reason ?

Answer. Unknown natural causes.

Question. When the country is free from scarlatina, what is the reason ?

Answer. Unknown natural causes.

Question. When the country is free from typhus, what is the reason ?

Answer. Unknown natural causes.

Question. When the country is free from measles, what is the reason ?

Answer. Unknown natural causes.

Question. When the country is free from small-pox, what is the reason ?

Answer. Vaccination.

There are ways innumerable for statistics to be delusive, and even where they are true, one trifling additional fact will sometimes turn the "necessary" inference

completely round to the other side. A little Scotch school-girl once came home and boasted that she was second in her class. The statement was perfectly true, and the "necessary" inference was that she was an industrious, clever little girl. But a sceptical member of her family, thinking this inference must be an erroneous one, cross-questioned the child, and asked her how many girls there were in her class. Then she was obliged to confess to one trifling additional fact, and say, "Well, there's jist me and anither lass." This, of course, made all the difference in the "necessary" inference, and turned it exactly the other way up. So it is with much statistics. One little overlooked circumstance makes all the difference, even where the facts have been correctly stated.

Here is a very comic bit of statistics.

A writer to the "Times" in the spring of 1877, who signs himself "The least of two evils," says that in London during nine months small-pox killed 722, whereas vaccination killed in that time not more than 22. Here are 722 in one scale, and only 22 in the other. "Now, which," he asks, "is the least of the two evils?" He omits to say that most of the 722 had been vaccinated, and that if there had been no such thing as vaccination the number of deaths from small-pox would most probably have been exactly 722. Now, I wonder what the brain of a man who could write such stuff as this would look like if exposed to view. Putty, perhaps.

One medical critic tells me that far from the profession feeling any pecuniary interest in the continuance of vaccination, the thing is so troublesome that they would with one voice recommend its abolition, if they could do so conscientiously. How is this? Statistics tell us that between the years 1841 and 1871 the public vaccinating

doctors alone received out of the rates one million six hundred and forty-seven thousand pounds, leaving out large sums as awards for successful vaccination, as well as the enormous gains derived from private celebration of the rite. It was stated before the Parliamentary Committee in 1871 (Report, page 82), that a good small-pox panic makes one or two millions of money flow into the pockets of the doctors. How charming it is to find that the profession has a soul absolutely superior to considerations connected in any way with these vast sums, and that it would even wish to save the public from spending them if it could be done conscientiously. It quite raises one's idea of human nature. However, it is perhaps not human nature in general, but only medical human nature. But this may be called sneering, so I will say that I doubt not that doctors are as conscientious as their neighbours, but that no class of men were ever indifferent to such immense gains. Indeed the bias of mind, whether conscious or unconscious, such gains must inevitably cause, sometimes leads to conduct which (if ever I allowed myself to use familiar expressions), I should consider could only be expressed by some such word as "fishy." As it is, I think I had better, perhaps, leave it unexpressed, except by the following instance. Dr. Skinner, writing about two children at Liverpool, on whose death a coroner's inquest brought a verdict of "death from vaccination," mentions a death from the same cause of a young lady, aged 15, previously in perfect health. "I brought," he says, "the case before the Medical Institution of this town (Liverpool). The meeting of members owned that the death was due entirely to vaccination, but they *expressed a desire that it might not be made public.* I have kept faith with them until now, when the love of truth compels me to proclaim it."

I once read of a man who was had up for obtaining money on false pretences. The evidence was so overwhelming that the prisoner could not deny it, but he begged, with tears in his eyes, that whatever penalty might be inflicted upon him the case might not be made public, for he had, he said, no other means of obtaining a livelihood.

Whether bias be conscious or unconscious the result is often just the same.

In all these matters doctors are, of course, no worse than most other men would be in similar circumstances. Saints are few, sinners many, and average people are average people. Here for instance is an illustration of bias in another profession.

It was lately proposed to put buoys at the mouth of the Orwell, which is difficult of navigation. The lives of many sailors would be saved yearly by doing so. But the pilots in the neighbourhood were up in arms about it. They said the buoys would make the navigation so easy that their occupation would be gone, and so they begged and petitioned that the sailing course might be left as dangerous as it always had been. Now I dare say these pilots were all excellent, conscientious men as men go.

There is great rivalry between railways and canals in India. Investors in the former say they are better adapted than the canals to prevent the famines. Investors in canals say the canals are best. A short time ago I read that a director of an Indian railway actually stated in public that wherever canals had been made, the agricultural produce was reduced almost to nothing, and that the sufferings when the famine and drought came were frightful. Now, I need hardly say that these lies were nothing short of colossal, and yet it is quite possible,

and even probable, that the utterer believed every word of them to be true.

It cannot be too often repeated that the evidence of an interested witness is absolutely worthless.

"In certificates," says Dr. May, "it is scarcely to be expected that a medical man will give opinions which may tell against himself. In fatal cases, instead of the real cause of death he will sometimes assign some prominent symptom, as, for instance, erysipelas, instead of vaccination. A case of death," he goes on to say, "occurred in my practice from vaccination, yet, in my desire to preserve vaccination from reproach, I omitted all mention of it from my certificate."

A very ludicrous certificate case occurred at Leeds in 1877. A child died. Mr. Corrie, a surgeon, like a straightforward, honest man, certified "death from vaccination." But the coroner (coroners are medical men)—the coroner, I say, refused to accept the certificate, inasmuch as vaccination "is not a legal cause of death." In other words, "it is illegal for a person to die of vaccination." So an inquest was held, and a verdict of "died by the visitation of God" was substituted. It is *not* illegal to "die by the visitation of God;" and this is fortunate, for it sometimes saves people from "dying by visitation of the doctor," which I need hardly say is utterly illegal.

I wonder whether the doctors know how they are making themselves the laughing-stock of the sensible part of the community?

When we consider how bias and ingenuity can twist statistics, we cannot wonder at the astounding assertions poor, deluded Mr. Sclater-Booth makes about vaccination. The following letter I published a few months ago in a country newspaper:—

"SIR,—We have no doubt many of us read Mr. Sclater-Booth's letter about vaccination, in which he states that since the Vaccination Acts have been in force there has been but one case of injury from the operation, which case arose solely from the doctor having taken the lymph used from a vesicle at a period of its course later than it should have been taken—the result being erysipelas. Then he goes on to state 'that all other alleged cases of death or injury from vaccination have been merely cases of accidental coincidence in time.' I cannot describe my amusement when I read these statements. First, at the cool impudence (or what looks like it) of the doctors who took in Mr. Sclater-Booth; secondly, at Mr. Sclater-Booth's simplicity in allowing himself to be taken in by them. There is an amusing book called "Mr. Verdant Green's Experiences at Oxford," but there is nothing in the whole of it more ludicrous. Vaccination puts in the course of a few years millions of money into the pockets of the medical profession. Many deaths result from vaccination, and then the profession goes and persuades Mr. Sclater-Booth that these deaths are only cases of accidental coincidence in time. If ever I should commit a murder, I do hope and trust that Mr. Sclater-Booth may be the magistrate before whom I shall be taken. I should explain the case to him as follows. I should say: 'I grant that by this poor man's death I come into a large fortune; that I did put some arsenic instead of sugar into his tea; and that he did die shortly afterwards in great agony; but I assure you on my honour that these circumstances had no connection together. There was nothing but accidental coincidence in time.' I have no doubt that on hearing this Mr. Sclater-Booth would say to me: 'I am very glad to receive from you this explanation. I can only say that I

am extremely sorry you have been put to so much inconvenience, and I shall reprimand most severely the police officers who have brought you here on so frivolous a charge.' Illustrative instances are invaluable, but they never 'go on all fours.' Thus whereas my motive would be the simple one of desiring to avoid being hanged, the motives of the medical profession in making their astounding statements about vaccination arise from three different kinds of bias. (1) The bias that arises from fear of losing vaccination fees; (2) the bias from fear of loss of credit to the profession if vaccination were known to be a delusion; (3) the bias from habits of mind of a lifetime. This last bias is a very strong one, and often leads doctors to be really and honestly blind to injuries and deaths from vaccination, simply because they have been brought up to look in other directions. The case is like that of the geologist who goes over a country looking for and at all the stones, and then, although the surface of the ground is all colours with flowers, says, when asked on his return home, that there was not one to be seen in the whole country. In fact, men see what they look for, and only what they look for. 'The eye,' says Emerson, 'sees only what it brings with it the power of seeing.' But to understand all this requires knowledge of human nature, and this is a thing politicians, and what are called practical men (sometimes extremely clever ones in their way), are often completely without.

"In my part of Yorkshire we are talking just now about the death from vaccination of a child of Colonel F——'s, who lives near York. The case seems to have taken a course not uncommon. (1) Vaccination, (2) erysipelas, (3) convulsions, (4) death. Sir J. Clarke Jervoise, writing to me about this, says: 'If the present owner of the name inherits the qualities of his forefathers, Colonel

F—— will not bear tamely the injury he has received.' But how can a man bring an action for malpractice against, and cause much trouble to, some kind, good, excellent, old twaddle of a family doctor, who has been giving him rhubarb and magnesia ever since he can remember anything? We all know such men, and most of us would be very unwilling to do them harm. It is true that a few years ago, in a case in some respects similar, I forced it into a law court by means of writing a pamphlet, but the circumstances were different. Again, I know that beyond trouble and annoyance such law cases do no professional harm to doctors, because so strong is the *esprit de corps* amongst them, especially with regard to vaccination, that medical men will flock from all points of the compass, like vultures in Africa to a piece of carrion, to swear that the deaths had nothing to do with vaccination. The doctors in a vaccination case are like the majors in India. Sidney Smith says that in Calcutta, when a rich widow appears upon the scene, the whole horizon immediately becomes black with majors.

"I must say I think that people in a witness box ought to be more careful about the truth of their assertions than in ordinary talk. It may be said that perjury and lying are the same things, whether in a witness box or out of it, and no doubt strictly speaking they are. Still, practically, it will be found that the man who will commit perjury is less conscientious than one who is scrupulous when on his oath, although he may not be so on other occasions. There is a story of an honest 'navvy' in a witness box who absolutely refused to kiss the book, and said: 'Naw, naw, I weeant. I'll tell a lee agen ony man in England, but I weeant swear to it.' Still the swearing of doctors in vaccination cases will undoubtedly often (if not generally) be done in a certain sense con-

scientiously, such is the force in the ordinary run of people of real self-deception, induced by self-interest, or by life-long habits of thought.

"After all, few doctors are so blind to truth as Mr. Sclater-Booth's medical advisers on these subjects. I never spoke to one of them who did not allow that he had known of deaths or great injuries from vaccination; only they always attributed them to the use of impure lymph. But using impure lymph is malpractice, and therefore actionable. Of course, strictly speaking, all lymph is impure. What can be more absurd than to talk of pure impurity, and thus to distinguish it from impure impurity? Jenner, as we all know, stated that he got the lymph he used from the heels of horses afflicted with 'grease'—'grease,' 'farcy,' and 'glanders' being three degrees (more or less chronic and malignant) of the same disease. There is no hard line to be drawn between them. And Jenner taught that this foul, half-decomposed matter must be put into our veins and mixed with our blood. Ugh! The dirty beast! It makes one sick to think of it.

"Though we must all feel for Colonel and Mrs. F——, the richer classes are not the classes most to be pitied. They can always get over the difficulty by paying some (to them) small sums of money—that is according to the present state of the law. No doubt Sir William Gull stated in his evidence a few years ago, that in his opinion children ought to be taken by force from their mothers' arms to be vaccinated, and Sir W. Gull is a man of much influence, so there is no knowing how much more stringent the laws about vaccination may not be made. Well, I can only say that if such increase of stringency takes place, and a policeman comes to carry off by force a child of mine, I shall just shoot him, though of course not

without due warning, for I should say to him, ‘Listen to me, I have nearly lost two children from vaccination, so if you dare to lay a finger on that child I shall shoot you as I should shoot a mad dog that was flying at its throat, whatever the consequences may be to myself.’ In this world people sometimes have to choose between two opposition duties, and then the lower one has to give place to the higher. When children are given to a man, his first and highest duty with regard to them is to protect their lives at any cost whatever. In a recent book I have indulged in a good many jokes. Vaccination is not a popular subject, so it is as well to give people some currant jelly to take it in; but I am not joking now. I mean what I say, and under the supposed circumstances I should most assuredly act up to it if I could prevent the operation being performed, and thus the probable murder committed, in no other way. I hope, however, I shall not have to shoot a policeman, for our legislators have not yet acted upon Sir William Gull’s idiotic suggestion.

“Yours, &c.”

In consequence of one of my children having been nearly killed by vaccination, I have obtained medical certificates which exempt them from undergoing it. But poor people cannot obtain such certificates, so their children are killed and mutilated right and left.

In the above letter to a country newspaper I have alluded to the ridiculous expression “pure lymph.” Professor F. Newman says: “To advise the infusion of corruption into the veins and entitle the poison, ‘*pure lymph*,’ justifies common sense in retorting that the physician who advises it is a fool, be he ever so learned, and the legislator who commands it is a tyrant, be he

but continued to tie the blades outside the handles just as their ancestors had done before them.

The Germans are more ready to adopt new ideas. At any rate, in this question of vaccination they are opening their eyes to the folly and wickedness of it quicker than we are. One German canton of Switzerland has already repealed its compulsory vaccination law, and the whole of Germany seems likely to do the same. A distinguished German physician, not long ago, thus apostrophized the English inventor of vaccination. "Thou English Doctor Jenner, thou hast brought the laws of nature into confusion ; thou hast made the people ailing ; thou hast killed unnumbered innocent children ; receive the devil's thanks from German soil."

In Germany it is some of the doctors themselves who take the question up. Medical men ought to do the medical reforms, but in England this is not found to be the case. Indeed, we have a proverb that "a profession never reforms itself." So the general public have to undertake them, and often succeed sooner or later. Twenty years ago all English doctors called Miss Nightingale a mad woman for her teachings about sanitary matters. But she persevered, got the public on her side, and now there is scarcely a doctor under forty years of age whose teachings on sanitary matters are not the same as the formerly ridiculed teaching of Miss Nightingale's. Of course we do not expect old men to change their opinions. Harvey said, he never could get a doctor above forty to believe in the circulation of the blood.

Miss Nightingale taught the public, and the public taught the doctors. So it is with vaccination. The public are at last teaching the doctors, long as it has been in opening its own eyes.

It is easier to understand why the public takes so

long to open its eyes to follies and superstitions than to understand why it ever adopts them, but the following story may give a hint.

In the last century there was a notorious and successfull quack called Rock. One day in a coffee-house on Ludgate Hill a gentleman expressed to him his surprise at his great success, whilst a certain physician he named, of great abilities, had but very little practice. "Come here," said Rock, "to the window, and tell me how many wise men you think there are in the multitudes who pass along this street." "About one in a hundred perhaps," was the answer. "Well," said Rock, "so long as the ninety and nine come to me when they are ill, your friend the physician is quite welcome to the remaining *one*."

Rocks abound, no doubt, at all times ; just as quackeries and superstitions abound at all times. Formerly it was witchcraft, now we have vaccination, living disease germs, &c. Formerly baked toads in silken bags were worn round the neck as charms against disease. In doctors' books of two hundred years ago we read the following prescription to ward off fevers : "Take eight pints of rosemary flowers, three pints of shell snails, two handfuls of seed flax, and one puppy dog nine days old. Wash the snails, kill the dog, fling away the head, and dry the quarters in a linen cloth. Pound all together to a powder, and put the powder into well-corked bottles. It is now ready for use ; and if a teaspoonful be taken once a day fever will be kept off."

At the present time the recipe for the same thing is as follows :—"Take matter from the heels of a horse that is suffering from 'grease.' Put the matter into the veins of a cow so that ulcers and running sores are produced. Take lymph from these ulcers ; pass it through human subjects ; lance the skin of a child and introduce

a particle of the lymph within the skin ; then, if a running ulcer ensues, the child will be safe from the form of fever called small-pox for the rest of its life."

Now, I really think there is very little to choose between these two prescriptions in point of absurdity, though there is in harmfulness. Of course, I would not wear a baked toad round my neck nor give anyone spoonfuls of powdered puppy dogs. Still they would do no harm. But no consideration on earth would induce me to put half putrid lymph that came originally from a diseased beast into the veins of a child of mine. In the first place, I should consider it dangerous to its health ; and, in the second place, if the child died, I should be tried for manslaughter, supposing, as I am supposing, that I performed the operation myself. It would not be as if I were a certificated doctor, licensed to kill any number of little children without a word being said ; but I am not a certificated doctor.

I have alluded to the way doctors have of explaining away deaths and injuries from vaccination ; and no doubt they often succeed in convincing people that black is white, and so getting themselves out of the vaccination scrapes that are so common. An ingenious eel will wriggle itself out of anything. However hard put to it, there is always "a shuffle left," as Cobbett said. But there is one person they cannot deceive. They cannot deceive *the mother*, for she *knows*. The public is deceived and the legislators are deceived, but the doctors cannot take in the mother who has watched each symptom and traced every change from the first infusion of the poison to the death of her child. They may practice their ingenuity upon her with the rhetoric of a Demosthenes, the ratiocination of a chief justice, and the heartlessness of a vivisectionist, but they may save their breath, for the

mother *knows*. Do doctors deny the truth of this picture ? I have seen it myself. I have heard the rhetoric, and been present at the ratiocinations. So I, too, *know*. Of course I do not mean that the rhetoric was quite equal to that of Demosthenes, or the reasoning to that of eminent lawyers. Still they did their best, first, to save the credit of vaccination ; secondly, to save the credit of their brother practitioner.

"The heart-breaking agony," says a writer in "Truth," "of a mother, a husband, or a wife is a bagatelle to the physician, compared with the professional reputation of his brother practitioner."

Though the belief in Jenner and his cow-pox is a superstition of the day, absurd as belief in witchcraft, we must not understand that there has been no improvement since the old times, for that is not the case. The improvement may not be great, still there is some. At any rate we do not burn our anti-vaccinationists alive, or kill them as they did the witches, even down to comparatively recent times. Mr. Leckey tells us that so late as 1704 a blacksmith in a seaport town, who had long been ill, declared he was bewitched by an old woman, whereupon the populace, encouraged by the clergyman of the parish, stretched a rope at a great height between a ship and the shore, tied the old woman by the heels to the middle of it, and then swung her about till she was dead. Now, in these days we (that is the general public) are certainly not so cruel. Popular superstition says, that if a particle of matter, got originally from a running ulcer of a diseased beast, be mixed with the blood of an infant, it will be safe from one of the forms of fever as long as it lives. But when a parent, a little wiser than his neighbours, refuses to allow the thing to be done, we do not tie him by the heels and swing him about till he is dead, we only

fine him or send him to prison. Thus, when superstitious fears are aroused, the general public is undoubtedly less cruel than it used to be.

It is allowed, even by many doctors themselves, that cow-pox sometimes permanently injures the constitution, even where not much injury is evident to the outward eye. Mr. Herbert Spencer, the acutest man in England at detecting the causes of things, speaks of the strong probability there is that the defectiveness in teeth that is so common in our times arises, in a great degree, from the disturbances to the system caused by cow-pox, just at the period when the young teeth are beginning to form. D. J. Morris tells us as a fact that an attack of scarlatina in infancy *does* destroy the enamel of the young teeth. I need hardly say that Mr. Spencer is opposed to vaccination in all its forms and in all its degrees.

The faith in vaccination is a superstition founded on ignorant theories of a profession which has a vested interest in the rite. It is like some of the religious superstitions of priesthoods in dark ages. I suppose there must be a certain quantity of superstition in the world, and it takes one form in one age, another in another. In the Middle Ages we were priest-ridden, and when the priests tumbled off, the doctors and pseudo-scientists jumped up into the empty saddles and have stuck on manfully ever since. Doctorcraft, like priestcraft, has hitherto been a strange mixture of self-interest and honest enough self-delusion, combined with corresponding delusion in the general public. Going farther back still than the priestcraft of the Middle Ages, we come to the old Romans. There again we find ignorance, superstition, and folly, though, of course, in different forms. Whenever they suffered some national disaster, the Romans, thinking it must be caused by the unchastity of a Vestal virgin,

burned one alive to mend matters. Whenever an epidemic occurred, their way of stopping it was to execute some public functionaries of the locality, alleging that they could not have offered up due sacrifices to *Æsculapius*, or the pestilence never would have come. In these days when small-pox breaks out in London, instead of executing the Lord Mayor, we kill a few little children by inoculating them with a disease from some four-footed beast. I really do not see that there is much to choose.

Sir Thomas Watson says, in the "Nineteenth Century," for June, 1878, that the fact of horrible diseases having often been imparted by vaccination constitutes a rational excuse for objecting to compulsory vaccination, and that he can applaud a father who "is willing to submit to judicial penalties rather than expose his child to the risk of an infection so ghastly." Still he is in favour of compulsory vaccination, but not of the old kind. He, with many other doctors, are in favour of compulsory vaccination direct from the calf. Jenner, himself, condemned this mode. Now let us see how the case stands. For seventy years inoculation was preached by the doctors as being infallible against small-pox, and perfectly safe. But at last it was found to spread small-pox fearfully. To inoculate is now penal. For the next seventy years vaccination from arm to arm was preached as being infallible against small-pox, and perfectly safe. At last an epidemic comes, numbers die, most of whom have been vaccinated, and the operation is allowed by the doctors themselves sometimes to carry with it what Sir Thomas Watson calls a "ghastly infection" of a horrible disease. So now, says Sir Thomas, Jenner's vaccination, for which he received from the country 30,000*l.*, is to be given up as a failure, and we are to commence a new experiment; which we are told by the

doctors, just as we were told in two other cases, is infallible against small-pox, and perfectly safe. Well, perhaps for another seventy years this is what we have to look forward to, and then something new will be invented, and so on. There is no limit to gullibility.

"It is useless to deny," says Dr. T. Wilson, in "The Lancet," "that vaccination by human lymph involves danger of scrofulous, syphilitic, and erysipelatous inoculation." Thus, at last, the profession is driven by the public to acknowledge these evils, and tells us, by way of remedy, to get the lymph *direct* from the cow or calf. But "lymph taken direct from the cow," says Dr. G. Gregory, "is often very acrid, and produces glandular swellings and local inflammations." "Some crazy enthusiasts," says Dr. Shorthouse, "recommend that lymph be taken direct from the cow or calf. They surely cannot have seen those frightful pictures of disease so produced, published by Mr. Ceely." And yet Sir Thomas Watson and the doctors say it is perfectly harmless. But for seventy years they said inoculation was "perfectly harmless," and then for seventy more that Jenner's arm-to-arm system of vaccination was "perfectly harmless."

At any rate, Jenner's vaccination is, I suppose, doomed; and this will be a gain so far. Jenner condemned vaccination *direct* from the cow. It was to be passed through a human subject first. Rather rough, by the bye, on "the human subject," to use an Americanism. But, as I say, Jennerism is to be renounced, and instead of his arm-to-arm vaccination we are to have it direct from the cow or calf, and our children will thus be safe from syphilis and scrofula inoculation. Whether inoculation of rinderpest and foot-and-mouth disease will take their places time, I suppose, will show.

Even where the objects are good, a certain school of





Doctors stand up for compulsory vaccination. They also say that the influence of vaccination completely wears out in a few years, and therefore that people should always be re-vaccinated. Indeed, it logically follows that if compulsory vaccination for infants is right, compulsory vaccination for adults must be right also; and I believe most doctors are logical in this respect, and consider that it should be made so. But it never will. The tide has turned, the public is taking the question up, and even infant compulsory vaccination is doomed. There are few better barometers to show the state of public opinion than the laughter of Mr. Punch. If Mr. Punch laughs at a thing the public generally laughs at it too. There was, I remember, a few months ago, a very ridiculous caricature of compulsory vaccination. No amateur pencil can contend against those of Mr. Punch's unrivalled artists, but mine has done its best to give my readers a rough idea of what the original represented. Rough the idea must be, as I have only recollection to go by.

politicians is far too fond of *compulsory* legislation. Compulsory legislation is usually retrograde legislation.

In 1747 Parliament passed a compulsory Act. It was an Act to compel Highlanders to wear trousers instead of kilts. Now, although we laugh at this in these days, it is neither so ridiculous nor so pernicious as compulsory vaccination. No doubt there might have been a certain degree of temporary discomfort attending the change of garment, inasmuch as man is a creature of habit, but, at any rate, it did not bring on dangerous attacks of erysipelas. Again, the Scotchman was undoubtedly liable to be sent to prison for not having on a pair of trousers. But, at any rate, he was not punished for conscientiousness, as is the parent who thinks it wrong to give his child a beast's disease. The Highlander refused to put on trousers, not because he thought it wrong to do so, but because he had no money to buy a pair with. Even in the present day the Scotch, so long as they live in their own country, are poor, to judge by the stories one hears. It is only quite lately that a Scotchman being asked on his return from a visit to London how he liked the great metropolis, answered : "I liked it verra weel, but its a domd expensive place to live in. I had na been there twenty-four oors when bang went a saxpence." Now, if a man looks on the spending of only sixpence in twenty-four hours as an extravagant outlay in these days, what must it have been in 1747? So how the Government at that time could have expected the people of Scotland to purchase trousers, I cannot conceive.

I will finish my remarks upon vaccination with a bit of personal experience.

Five or six years ago a daughter of mine, five years old, was revaccinated on the *right* arm, at about two o'clock in

the afternoon. About five o'clock she complained of pain and stiffness in the *right* arm, the pain extending to the fingers. About eight o'clock the pain and stiffness had extended to the *right* leg, so that she had difficulty in putting her *right* foot to the ground. By one o'clock next morning she was in frightful convulsions, which lasted a long time, the doctors quite giving her up. In the course of a day or two the usual vaccination eruption broke out, but not only in the vaccinated spot. It broke out on the legs and on different parts of the body. There was much discussion about the case, which ended by my writing a pamphlet and so forcing it into a law court. Medical men from London and elsewhere were examined in the witness box, and they swore that the illness had nothing, as it seemed to them, to do with the vaccination. Numbers of medical men were in the court, and various were the opinions expressed by them. One said it was a case of scarlatina, another that it was purpura, another that it was eczema, another that it was typhoidal, and another that it was a mere case of ordinary indigestion, whilst one of them was inclined to believe that it was a terrible disease called cerebro-spinal-meningitis,—the only case of it that had ever been known in England. It is true that one of the medical men had stated privately to the parents that of course the illness had been caused by the vaccination, but when asked by the solicitor employed in the case to repeat this in the witness box, he refused to do so. Great is the force of professional pressure, professional rules, and professional *esprit de corps*. Before we condemn the conduct of people under this pressure it would be well to ask ourselves whether we, in their places, would act differently? A poor mechanic longs to work for his starving family, and knows it is his duty to do so, but he is prevented from

doing so by the pressure exercised upon him by his trade-union. We naturally call him a coward. Yes, but should we have been any better in his place? some no doubt would, but how many?

Doctors say there is no trade-unionism in their profession. The public know there is.

"Doctors," says Charles Reade, "profess to be shocked at the indelicacy of women practising medicine. But they are not shocked at women being nurses. How is this? The reason is that nurses are paid only a guinea a week, not a guinea a visit. The whole thing is simply trade-unionism for gain. It is a mere money question. All Europe, even Russia, open their medical schools to women, and so does the United States. The pig-headed Briton alone refuses to do so."

It is impossible to prove anything whatever to those who *will* not believe. But I am in my own mind quite as certain as I am of my own existence, that my daughter was all but killed by vaccination; and I am not by any means sure that she will ever get over the evil effects. This being so, I carefully and punctually curse the medical profession and all its abominable superstitions with all my soul and with all my strength first thing every morning and last thing every night. Once, indeed, after a hard day's hunting, I fell asleep without having said my curses. But I repented in sackcloth and ashes, and next night made atonement by repeating them many times over with quadrupled unction.

I say I curse the profession, but that means in the abstract, not any individual members of it. Indeed those I know are, with hardly an exception, such excellent men, that I wish them in their individual capacity nothing but good, and would do what I could to further that good. It is somewhat like M. Comte and his "*l'humanité*," only

the other way on. M. Comte (who, according to Mr. Mill, was a quarrelsome, ill-conditioned man), whilst he professed to worship *l'humanité* in the abstract, was in the habit of cursing individual men by all his—gods I was going to say—but I mean by all he swore by, whatever that was—Clodilde de Vaux, probably—at least he called her “the best personification of the Supreme Being;” or perhaps his maid-servant, “l'incomparable Sophie,” who was, he says, endowed with a fortunate inability to read, and was “a model of perfection.”

My feeling about the medical profession must necessarily have exercised an influence upon what I have written, though not upon the truth of it, for every word is true; but still it no doubt will have led to my putting this truth more clearly than I should have otherwise troubled myself to do.

But, besides this strong feeling, I also have another, namely, the interest I take in the medical profession, which interest comes from my faith in a future time when medicine will be a blessing—a time when instead of the present chaos of teaching, where systems of treatment change every five years, and doctors differ without limit, when, I say, instead of this, some degree of unanimity will reign and medicine will be a science.

Hitherto, since men have lived on the earth, the destruction of life caused by medicine must have been fearful. “Medical men,” said Voltaire, “employ themselves pouring drugs, of which they know little, into bodies of which they know less.” But my disposition is a sanguine one, and I hope for better things. Perhaps, indeed, in some countries an approximation to a better state of things has been reached already, and if only doctors would drop their ignorant and inherited delusions, it would soon be quite reached; and thus a stop would

VIA SEAN TAN

be put to the flow of ridicule that has hitherto been unceasingly poured out upon them.

Satirists of all times have never tired of the subject, and the air, as we all know, is thick with jokes and stories about the profession, though of course the subjects of them are less conscious of it than others, for people are, as a rule, good-natured, and avoid hurting the feelings of men who are for the most part estimable in a high degree.

No statement should be made without grounds, so I think it right to give my readers an illustration or two of the kind of ridicule I speak of, though it can be hardly necessary, as we all come across them every day.

A man, who had the gift of what St. Paul calls "the discerning of spirits," lost his health, and determined to seek medical advice. With this view he went to the house of the most eminent physician of the locality; but when he got there he found the whole street blocked up with restless spirits of departed patients haunting the house of the man who had caused their deaths. Horror-struck at the sight, he went to another eminent physician. But here again it was just the same. After trying several more with the same result, he at last found a door that was only besieged by one single spirit. So he went in, and at once began to congratulate the owner of the house upon the success that had evidently attended his practice. But the doctor was a straightforward, honest man, and said at once that he had been very unfortunate, and had as yet had only one single patient. Now, whether this story is strictly true or not, I think most people will agree that it is "suggestive."

A country doctor, who is fond of a gallop with the fox-hounds, is riding home. The young curate meets him, and sings out, "Well, doctor, did you kill?" But the curate has made a little mistake. This time the doctor

was returning, not from hunting, but from the death-bed of a patient.

"We learn," says a country newspaper, "that Dr. —— is about to run a telephone from his office to the residences of his patients. Really death is being made easier every day."

Mamma.—Look, Cissy! here is the dear doctor coming. What a favourite he is! See, even the little chickens run to meet him!

Cissy.—Yes, mamma ; and the little ducks cry "quack, quack !"

Volumes could be filled with nonsense of this sort, and the doctors have only themselves to thank for it. As long as they stick to ideas and practices of ignorant old times, and as long as they make themselves ridiculous in this and other ways, so long will absurd jokes and stories about them be not only repeated but invented without end. But who ever hears jokes and ridicule about the man of wisdom and of real beneficence, who brings comfort, consolation, and healing, wherever he goes ? and who, even, where the patient's infirmity is incurable, brings solace to the mind, which, reacting upon the body, mitigates in its turn for a time the disease itself. When the profession of the healing art consists of such men as this, the satirists and joke-mongers will have to betake themselves elsewhere. Here their occupation will be gone.

Some people deny that any medical man can be honest when he defends vaccination in the teeth of what he must know about it. But I, on the contrary, always stand up for the doctors, for I know the overwhelming power of inborn and inbred bias in people who cannot do their own thinking ; and the majority of doctors can of course no more do their own thinking, than the majority of any other class.

One of the medical critics of "Our Medicine Men" tells me that I am totally and entirely ignorant, even as to what is the fundamental theory of vaccination, and then he proceeds to enlighten me as follows. "Every child," he says, "is born with certain small-pox elements in it. Vaccination destroys these elements, and the child is safe for the rest of its life."

Bacon is supposed to have come into the world in order to condemn foolish guessing and theorizing in science. Is there one foolish guess or theory the less? I doubt it. Foolish theorizing is a part, and a large part, of human nature. No doubt the only reason we are not told that children are born full of measles elements, chicken-pox elements, typhus elements, typhoid elements, scarlatina elements, scarlet fever elements, rubeola elements, and the elements of all and each of the innumerable other shades and varieties of the zymotic fevers, I say the only reason we are not told this probably is, that, except in the one variety called small-pox, there has not yet been any invention answering to vaccination that has to be maintained through thick and thin.

Classification of these diseases may be endless, for in nature there is none. Nature is infinite in gradation. Formerly when systematization was less elaborate than now, all the eruptive fevers were classed under the one head, small-pox. They may be also classed under a thousand heads if people choose, and had sufficient discriminating power. There are shades, complications, and combinations of the zymotic diseases without end and number. "I have seen," says Miss Nightingale, "fevers begin, grow up, and pass into one another. I have seen with a little overcrowding, continued fever grow up; with a little more, typhoid fever; and with a little more,

typhus; and all in the same ward or hut. "Each disease," says, on the other hand, the average doctor of the period, "is an entity—a separate living existence that breeds like a dog or a cat. Every disease has its separate germ." But some doctors are wiser. "The term disease," says Doctor Johnson, "is negative." It is the negation of life and of the proper degree of activity and motion in some organ or organs. *Then* come germs and minute organisms—not before. Insect and fungoid life do not precede but succeed death and stagnation. A dead dog is full of maggots, but they did not kill it. On the other side of the question, Dr. Tyndall writes articles in the "Fortnightly Review" about ferments and germs of disease. The articles consist for the most part of old facts and new guesses. But the style is excellent, so they are as interesting to read as such an uninteresting subject can be made. Dr. Tyndall's weak place is credulity; he treats unverified assumptions as if they were verified; his faith in the truth of his guesses is that simple faith we all think so charming in children, and he believes in the wisdom and goodness of almighty "matter" with all his soul and with all his strength. One of his lectures is about "minute particles of matter suspended in air" (called by the vulgar "dust"), and it is put in an interesting manner, but there is undoubtedly a tendency in some of our scientific instructors to throw "minute particles of matter suspended in the air" into the eyes of the public, and to hide old things under new phrases, like Mr. Huxley with his "protoplasm," a word imported a few years ago from Germany that represents no idea that is both new and true whatever.



CHAPTER IV.

ABOUT GERMS OF DISEASE, ABOUT PROFESSOR TYNDALL, AND
ABOUT THE GUESS-WORK THAT HE CALLS SCIENCE.

PROFESSOR TYNDALL's teaching seems to be, that every case of the infinite varieties and shades of zymotic fever arises primarily from the patient having taken into his system in some way a minute living germ of the minute living parasite that causes that shade or variety of fever. Now I say that this is putting the cart before the horse, and that sewer gas, foul air, living in overcrowded dwellings, insufficient or defective food, and evil habits are the usual primary causes of disease—disease meaning diminution of life, or of healthy motion in some organ or organs. Starve a horse, and his skin becomes full of minute organisms; keep him in perfect health, and every particle of him is so full of life and motion that the invisible little creature can find no quiet spot to build her nest in. Still she makes the best she can of it, and lays a few thousand eggs. In an hour she finds them all addled, and what does the little idiot do, but go and lay a thousand more, of course with no better result. At length she does what she ought to have done at first. She looks about for an *already diseased* animal; finds one with a half-dead skin on it, or a half-dead tissue

somewhere, and rears a fine family without further difficulty. But the parasite has not *caused* the diseased state of the tissue. The cause is want of oats. Indeed, the illustrations Dr. Tyndall gives are illustrations not of his side of the question, but of the other side. One of them is this. A few years ago, in Switzerland, he cut his leg against a piece of granite. The wound became an abscess and laid him up for many weeks. What had happened he tells us was as follows. In his room he had, for experimental purposes, a quantity of hermetically sealed bottles containing infusions of fish, flesh, and vegetables. One day he incautiously opened these bottles, when out rushed hordes of minute organisms, or what are called bacteria of putrefaction, which invaded the open wound, and never rested till they had laid him on his back for six weeks with an abscess. Yes, but the flesh was first injured and partially killed by the piece of granite, just as sewer gas, or bad air, first partially kills some organ or organs. Perhaps the minute organic life is a good instead of a bad thing for recovering. Nature's doings are beneficent. Active-minded little creatures may, perhaps, promote recovery by preventing stagnation in the part. But of this I am quite sure. The things to wage war against are dirt, vice, sewer gas, foul air, foul water, overcrowding of houses, and insufficiency of oxygen and of the pure delicious air of heaven. And the war must be carried on by good air, good food, good water, and good habits. The teaching of Messrs. Tyndall, Budd, and Co., is that the real things to wage war against are germs of invisible living organisms, and that this war is to be carried on by means of foul-smelling and disgusting carbolic and other compounds. When will our doctors learn that the cure for dirt is cleanliness, not dirt of another kind?

But let us see how our doctors differ about this.

"Disease," says Professor Tyndall, "is caused by germs of the minute fungoid organisms called bacteria;" thus putting the cart in front to pull the horse.

"Fungi," says Dr. L. Beale, putting the horse in front to pull the cart, "fungi can no more be regarded as the causes of disease than the vultures which devour the carcase of a dead man is the cause of his death. No connection," he says, "has ever been shown to exist between any contagious disease and any kind of fungus." And again he says, "Neither bacteria, nor fungi, nor any of the lower forms of life are concerned in the propagation of the contagious diseases." Evidence shows that bacteria, although co-existing with disease, does not cause it. The probability being that minute living organisms are a beneficent accompaniment of putrefaction, neutralizing its noxiousness. The dead matter becomes again living matter, and thus again becomes innocent. In all inoculations, the more the lymph swarms with bacteria the less likely is the operation to succeed. Vaccine lymph that has been kept so long as to "be alive," is of no use, says Dr. L. Beale, for vaccination, for it ceases to poison; and in those terrible inoculations that sometimes take place during the dissection of dead bodies, the more decomposed the body is, the safer is the dissector.

Liebig believed bacteria only to co-exist with disease, not to cause it.

Shallow people believe what they see, and nothing else. They can see some ferments, fungi, and parasites, so they believe disease and death to be caused by them and not by the real causes which they cannot see. They are like the old-fashioned country cattle-doctors. A cow's lungs after death from inflammation are found to be

swollen, so the doctor thinking the swelling the cause of the disease *because he could see it*, used to prescribe for inflammation of the lungs in cows, ten pounds of shot to be poured down the animal's throat in order, by its weight, to keep down the lungs and prevent them swelling.

Another weakness of human nature is to be always drawing false analogies, like those people who believe bacteria to have eggs because hens have, and that these eggs or germs have thick, horny coats, which stand a great deal of boiling, because the seeds of some plants have. By the way, Professor Tyndall's logic about this matter is really curious. I grant, he says, that putrefaction takes place after the germs that cause it have been boiled for hours ; still it is known that the dried seed of the Brazilian plant "Medicago" has such a thick, horny coat, that it can retain vitality after long boiling ; therefore the germs of bacteria have such thick, horny coats, that they can retain vitality after long boiling. I may here inform my unscientific readers that the germs of bacteria cannot be seen even with strongest microscopes, and that Professor Leslie, Professor B. Sanderson, and the best science of the day, deny that bacteria have any germs at all.

Another foolish analogy is to quote the vine and potato diseases as being caused like diseases by parasites ; but what says Dr. J. Morris ? "When the potato or the vine suffers, parasites abound. But facts show the prime cause to be weakness of health in the plant." The potato becomes diseased, and then come the parasites. In like manner the fungoid parasite called mould, sometimes settles on wood, but the wood must *first* be diseased or dead more or less.

Wherever health or the right degree of motion in

living substance is lost, parasites appear ; but the loss of healthy motion—that is to say the diseased state—comes first.

Much of the science (so called) of the day is little else but guess-work from fancied analogies. The use of both guess-work and analogy is good, but not the abuse of them. Newton used analogy, guessed gravitation before he proved it, and then, but not till then, he called it knowledge. But our fashionable scientists call their unproved guesses knowledge, and sometimes even when proof is impossible.

There are few more fertile causes of error than the marvellous power human ingenuity possesses of forming plausible theories, and drawing (so called) necessary inferences from analogy. But inferences from analogy cannot be depended on. For instance, ever since the time of Hunter men of science have supposed that blood in all animals circulates in only one direction. This was their inference from analogy. But at length it has been discovered that this inference was a false one, and that nature sometimes behaves in an inconsistent and unwarrantable manner, and makes in the very teeth of inductive science some creatures called Ascidians, with blood circulating first one way and then the other, the heart stopping a moment between times, as it were, to put the pump-handle on to the other side. So much for analogy.

Pursuing knowledge by means of guesses, analogies, and unverified assumption alone, though often amusing, is delusive and unscientific.

Mankind employs its experts to analyze things and ferret out facts for its use. But some of them manufacture guesses instead, and then palm them off on their employers as facts. Now, inasmuch as many of these experts are very clever men, this looks like dishonesty,

but it really is in general only confusion of mind, for, though clever heads are common, clear ones are rare.

About the word "expert," I must explain that I use it to express a person who devotes his life to one subject or pursuit to the exclusion of all others. This leads to his acquiring useful facts, but it is unfavourable to his drawing correct inferences, even on his own subject. "What material must we use," asked the Athenian, "for statues of great men?" "Oh," said the tanner, "there is nothing like leather." "What do you do when you have influenza?" I asked a hairdresser, who was operating upon me. "Oh," said he, "I gets my 'ed well brushed." "What is it that we should look up to with reverence and adoration?" "Oh," says Professor Tyndall, who devotes himself to the material, or what is called the dead side of nature, "matter contains the promise and potency of all life—matter is the all in all."

It is impossible to get over the influence of a professional education and the habits of a lifetime. At Commodore Trunnion's marriage he kept his bride waiting for him a long time in the church. The reason, as it turned out, was, that when he and his best man, Lieutenant Hatchway, mounted their horses and set sail, as they called it, for the church, they found the wind to be dead ahead, so they set to work systematically to beat to windward. First they made a stretch to the right, then they tacked about, stood over to the other side, and made a stretch to the left; and in this way they were progressing, when a messenger sent by the party that was waiting in the church came up and expostulated at this slow mode of procedure. But it was no use whatever. The habits of a lifetime were not to be got over at once, and to the suggestion that they should steer in a straight line for the church the Commodore said, "What!

right in the wind's eye? Why, where did you learn your navigation, you land lubber? Go back and tell those who sent you that the wind has shifted since we weighed anchor, and that we are obliged to make very short trips in tacking by reason of the narrowness of the channel; and that, as we lie within six points of the wind, they must make some allowance for variation and leeway." So it is with some of our men of science and experts. They pass their lives analyzing till at last they lose all power of proceeding in any other way but by analysis, or even of believing in there being any other dependable way to proceed. And nothing can make them see the truth that nine hundred and ninety-nine parts out of a thousand of human conduct are and ought to be founded on other things than analysis, or the truth that if analysis, and analysis alone, were made the only foundation of action, human life would at once come to an abrupt conclusion.

Very much of the science that is in fashion is nothing but guess-work. The scientist of the period revels in theories, guesses, and arbitrary assumptions, which he dubs "necessary inferences." Some day a new fact is discovered—one more little truth due perhaps to the admirable perseverance and ingenuity of some scientific investigator, and wrested by him out of the infinite regions of mystery and ignorance that lie outside the little circle of what we call knowledge. At once this fact overturns a dozen of our beautiful "necessary inferences," and they are gone, never to be heard of more—of course, for they were only guesses founded on false premises—mere assumptions. Any clever fool, with a lively imagination, can assume and spin out of his inner consciousness any number of "necessary" inferences.

An illustrious French savant has lately found out by microscopic experimentalization that the colour green is

deleterious to life. This is his "necessary inference." The grass is green, the trees are green, and the world in summer is glorious with every shade and variety of green. Green deleterious! I would not believe it, no, not if every scientific expert in the universe were to take his microscope in his right hand and swear upon it before almighty "matter" that this was the inference, the whole inference, and nothing but the inference.

Matter is all, there is no God, and free will is a delusion, says the third-class scientist. These are, he tells us, "necessary inferences." But what is the truth? Man execrates materialism, his soul longs for God as "the hart panteth after the water brooks," and he knows he is a free agent, and has duties. No God! No absolute right! no absolute wrong! no duty! no free agency! no living or spiritual side to the universe! I would not believe these things were every scientific expert in the universe to swear by all his holy prophets, Comte, Haeckel, Huxley, and Tyndall included, that no other inferences were possible.

Many of our scientists tell us as a "necessary inference" that there is a universal ether spread through infinite space, and that it consists of "an assemblage of vibrations,"—vibrations, that is, with nothing to vibrate—a thing inconceivable to the human mind. And yet these two guesses, the first of which is disputed, and the second of which is inconceivable, are given to the public as knowledge. More guesses might be mentioned, falsely given to the public as knowledge, such as guesses about atoms, guesses about molecules, guesses about protoplasm, guesses about "the matter of life," guesses about "the promise and potency" matter contains, guesses about germs, &c., &c., &c.

Men of science ought clearly to distinguish between

their beliefs and their knowledge. "If," says Mr. Kirkman, addressing our popularizers of science and public lecturers, "if you have a confession of *faith* to make, make it like a humble and honest man; but come not to us pretending that you have a scientific key to chambers which science can neither shut nor open."

Sometimes guess-work from analogy goes quite crazy. Take, as an example, Professor Tyndall's rhapsodies about vapours, which Dr. L. Beale so justly ridicules. Describing the forms vapours take, the Professor holds forth about "their marvellously complex structure, their spectral cones with filmy drapery and exquisite vases with faintest clouds like spectral sheets of liquid—like roses, tulips, sunflowers, one within another—like a fish with gills and feelers—like a jelly-fish, with the internal economy of a highly complex organism, exhibiting the animal form as perfect as if it had been turned in a lathe," &c., &c. The upshot of this ascending scale, of course, being that there is no essential difference between a cloud of vapour and a man—the cloud of vapour, in fact, containing "the promise and potency" of all the forms of life. Such is science according to Professor Tyndall, and yet how like it is to the favourite amusement of children of finding out faces in the fire. But at any rate the children do not call it science.

Mr. Darwin writes books to explain to us his principle of sexual selection. But now and then he comes across a fact that diametrically opposes his principle. This opposition he always with admirable candour confesses at once, and then he proceeds to form a special theory or new guess to meet the case, and extremely well he generally does it. Still I sometimes think that our leading men of science should keep a professional writer of fiction to do their imagination for them. A man like

Mr. Darwin for observation, combined with an Edgar Poe or a Jules Vernes for the theories, would together be irresistible. And yet it is wonderful how the same person will sometimes combine in himself opposite qualities. No one can deny Professor Tyndall's powers of observation, and yet in always inventing on the spot an explanatory theory when on any point nature fails to back him up he is also quite unsurpassable. Take, as an instance, his controversy about germs. First he said that if the imaginary germs were boiled no living organisms would appear. So boiled they were, and the organisms appeared just the same as before. Oh, but, said the Professor, they are not half boiled ; boil them again. So they boiled them again. Still the organisms appeared. Oh, but, said Professor Tyndall, it is only the more developed germs that will be destroyed so easily ; the younger ones, no doubt, have horny coats—at least the seeds of the South American plant, "Medicago," have. So they boiled them for a long time. Still the organisms appeared. Oh, but, said Professor Tyndall, the air of the laboratory was no doubt impregnated with germs ; we will go up on to the roof. So they went on to the roof. Still the living organisms appeared. Oh, but, said the Professor, my assistants wore the same clothes they had on in the laboratory. So the men changed their trowsers, &c., &c. Now, of course this sort of thing might go on till doomsday, and nothing be settled after all. Indeed, about the imaginary germs, the very existence of which is denied by our leading men of science, nothing is settled, and nothing ever can be settled. From the nature of the case, neither side can possibly win.

Still, that is no reason why the opposing experimentalizers—Professors Tyndall and Bastian—should lose their tempers, as I am sorry to say they seem to do.

They should take example from the unfailing courtesy with which our first-class men of science, like Mr. Darwin, treat their opponents—a courtesy, by the way, that really seems a new thing in the world between controversialists. Martin Luther seldom spoke of his opponents except as pigs or devils. Salmasius boasted that he had been the cause of Milton's blindness, and Milton afterwards glorified himself on having been the death of Salmasius. Coming down to later times, M. Comte calls his friend St. Simon "a depraved quack," and Guizot "a vulgar pedant." His language about M. Arago was French Billingsgate of the richest description; and in his later years, when he was living on the charitable contributions of his disciples, his eloquence when the money fell short was anything but unadorned. It is a pity, then, that our germ experimentalizers should go back to the habits and customs of our forefathers, thus subjecting themselves to doggrels such as those of Mr. Punch.

"Let bigots write with sneers of spite
 On dogmas old and new ;
 Let priests and parsons differing fight
 As 'tis their nature to.

"But sages, you should never let
 Such female passions rise ;
 * * * * *

"Look up to truth, all ends above,
 Seek that and that alone ;
 Nor squabble out of mere self-love
 O'er crotchets of your own."

The said crotchets being about spontaneous generation,—the question that can never be settled, and that would signify nothing if it were.

When I say that courtesy is the rule now amongst controversialists, I mean in Europe. I know nothing

about America, and Mr. Bret Harte undoubtedly celebrates in verse a terrible affray at a meeting of geologists and men of science, where he tells us that—

“Nothing could be finer or more beautiful to see
Than the first six months' proceedings of that same society ;
Till Brown of Calaveras brought a lot of fossil bones
That he found within a tunnel near the tenement of Jones.

“Then Brown he read a paper, and he reconstructed there
From these same bones an animal that was extremely rare ;
When Jones got up and asked for a suspension of the rules,
Till he could prove that those same bones was one of his lost mules.

“Then Brown he smiled a bitter smile, and said he was at fault—
It seemed he had been trespassing on Jones's family vault.
* * * * *

“In less time than I write it every member did engage
In a warfare with the remnants of a palaeozoic age ;
And the way they heaved those fossils in their anger was a sin,
Till the skull of an old mammoth heaved the head of Thompson in.

Then Abner White of Tarville raised a point of order, when
A chunk of old red sandstone caught him in the abdomen ;
And he smiled a kind of sickly smile, and curled up on the floor,
And the subsequent proceedings interested him no more.”

In the “Nineteenth Century,” for March, 1878, Professor Tyndall published against spontaneous generation what he calls “a last word.” Please God it may be the last. That's all I have to say. He begins by gently reproving Dr. Bastian for want of courtesy to him (Professor Tyndall), and then proceeds to tell him that he (Dr. Bastian) has a confused mind—that his writings are mere illicit wanderings—that he proves himself to be unacquainted with the real basis of scientific inference—that his knowledge is nil—that he commits the levity of enunciating a theory without having verified it experimentally—that his misunderstanding of the experiments makes him blind to the cogency of the case—and that life

is too serious to be spent in hunting down the Protean errors of Dr. Bastian. In fact the article seems to be written at that degree of white heat which always makes things so pleasant and lively to read, especially when preceded by charming remarks upon Christian courtesy. Contrast is always effective. It is like the master of fox-hounds when a rather too keen young farmer rode over his hounds. "You know," said he, mildly, "that I am a gentleman, and therefore cannot make use of uncourteous language; and you take advantage of this, and think you can ride over my hounds just as you like; but I would have you to know, sir, that you are a d——d * * * * *

* * * * * * * * * * ;

in fact there followed a string of expressions so rich that it can only be represented in print by blank spaces and asterisks.

Loss of temper in a man is a pretty sure indication of his case being a bad or at any rate a doubtful one. The feeling of being baffled always causes anger. A one idea theorist is certain to rage when a word is said in disproof of his theories; and what makes him rage is the consciousness that there are weak places in them. Thus the shallow third-class scientist, thinking that everything in nature can be understood by the human mind, bubbles over at the very word mystery; but the reason he bubbles over is because he is secretly conscious that the things of nature are really incomprehensible. Mr. Leslie Stephen loses his temper over what he calls "the filth" of the incomprehensible phenomena that attend some diseased and exceptional conditions, which phenomena may be classed under the head of "modern spiritualism." But the reason he loses his temper I doubt not is, that he has an undercurrent of suspicion that there are, after all,

more things in heaven and earth than are dreamed of in his philosophy. He tries to account for the phenomena in question upon grounds of reason, science, and experience, and the baffled feeling when he finds himself unable to do so rouses his wrath, so that he calls the whole thing "filth," and implies that Mr. Wallace, Mr. Huggins, Professor De Morgan, Mr. Crookes, and a host of other eminent men, are nothing but "filthy" idiots.

Baffled dogmatism almost always ends in impotent anger. Of course, expressions are not proofs, but only indications of tones of mind. So when Mr. Stephen calls the opinion of eminent men "filth," the expression may really proceed out of the gushing, lovingkindness of his heart at the moment. Still it looks like anger. So it is also with Professor Tyndall's expressions with regard to Dr. Bastian.

To the human-nature fancier all such follies of the (self-supposed) wise, and even sometimes of men who give themselves up with admirable earnestness and devotion to the pursuit of knowledge, may be but matters of curiosity and amusement, but to the men themselves they are a great misfortune, inasmuch as they act as hindrances to the discerning of truth, more than almost anything else. If a man can think of nothing but his own glorification, and the triumph of some side he has happened (perhaps by accident) to take up, good-bye, truth. That there are many such men, no one can doubt. Who they are can only be known with certainty to the men themselves. Still there are often indications.

By the way, Mr. Leslie Stephen writes his article to show that it is "the believers" who are the real infidels; that is to say, that believers in God disbelieve the facts of science. But he is totally wrong. An educated believer never disbelieves the facts of science. He no more

believes water to run up hill than Mr. Stephen himself. Instead of disbelieving the facts of science he only doubts till proved the guesses of sundry imaginative scientists. He does not deny proved truth, he only refuses to believe (till proof is forthcoming) in sundry guesses and imaginations which are opposed to the existing, and for the most part instinctive, beliefs of mankind ; as, for instance, in the fantastic guess that matter (according to the accepted, and therefore only real, meaning of the word) creates mind, or that it contains in itself "the promise and potency of all life ;" in the unnatural guess that the creating causes of all things come from below man instead of from above him ; in the repulsive guess that there is nothing for men to reverence and worship except M. Comte's "*l'humanité*," including all the scoundrels, murderers, fools, thieves, tinkers and tailors, idiots, savages, and anthropoid apes that have ever existed ; in the eccentric guess contradicted by the consciousness of every man, woman, and child in the world, that we are all nothing but automatons, without power of spontaneous action or choice, merely wound up at birth to go for seventy or eighty years ; in the paralyzing guess that nothing is right and nothing is wrong, but what is called "right" or "wrong" only means some rules made for convenience in social life, and indefinitely variable according to circumstances ; and in many another guess of our fashionable scientific guessers.

A few more illustrations of guess-work and the power of ingenuity to spin convincing explanations and guesses out of the inner consciousness.

A Darwinite says that hen birds are not bright-coloured, because the dull ones not being seen and eaten by hawks, a dull-coloured race has survived by natural selection. An objector gives instances of hens

with very bright colours. Oh, but, guesses our ingenious Darwinite, in this breed the male birds courted the bright-coloured ones and neglected the others, and thus a bright-coloured race has survived by natural selection.

Now, no doubt, this is a very ingenious guess, which seems to account for observed facts. But the question to ask is not whether it is ingenious enough to account for facts, but whether it is true.

Again, some race of savages is observed to be brave and strong. The ingenious Darwinite says, that in fighting, the strong and brave killed the weak and cowardly ones, and so a strong and brave race survived by natural selection. A tribe is mentioned composed of weak and cowardly men. Oh, but, guesses the Darwinite, in this case all the strong and adventurous men got themselves killed whilst fighting another tribe, the cowards and weakly ones stayed at home, and so an imbecile race survived by natural selection.

Again, the evolutionist says that all worship comes from nicknames. For instance, a great savage warrior is nicknamed "The Lion." "The Lion" dies, but his memory lives, and in course of time the worship becomes transferred from the great warrior to the animal itself. Hence animal worship. A tribe is mentioned of plant-worshippers. Oh, but, guesses the evolutionist, in this case it was a migratory tribe which came from some district where the worshipped plant grew, and gradually the tribe changed the legend of their having come from the district, into the legend that they were lineally descended from the plant that grew in the district. Hence plant-worship. A tribe is mentioned that worships the sun and moon. Oh, but, says the evolutionist, in this case the worship of the sun and moon is really the worship of two ancestors

who were mighty warriors, and who, after death, were turned into the sun and moon.

Now all this is very entertaining and ingenious, but again the question to ask is, not whether it accounts for observed facts, but whether it is true. Any man with sufficient ingenuity will be able plausibly to account for almost any facts. Even if some of these guesses have truth, they do not account for worship, nor indeed, do they make one step towards accounting for it. They do not account for the passion itself. They at best can only account for the direction into which savages sometimes turn the passion. The greatest things known in nature are the noble or Christian passions of highly-developed men at the present time, and yet our evolutionists think they explain them by talking about ignoble passions of undeveloped men at another time. But the only way to understand a passion, is to experience the passion itself, not to talk *about* it only, and trace it back to something else. The only way to know what bread is, is to eat, not to analyze it. If an analyzing man tells me that bread means sundry gases and earths, to which he traces it back, he tells me a lie; for the gases and earths starve me to death. The word "bread," on the contrary, means a substance that sustains life. Telling me about gases and earths, is telling nothing about a loaf of bread at the present time, but only about something else at another time.

A few more instances to show how ingenuity in sufficiency will make any assertion whatever seem reasonable, and how it can always get up at a moment's notice a theory that sounds unassailable.

Mr. Butterwick was completely without knowledge of horses, and yet one day he bought one. When he got him home, a somewhat horsy young friend of his hinted that his fore-legs were rather bowed out forwards. "Oh,

but," said Mr. Butterwick, "that is the very reason I bought him. You are a young man," he continued, "with but little experience, so you cannot be expected to know about such matters; some day you will perhaps understand the principle of the arch. Still, I will try to explain it to you. When architects want a building to bear a great weight they construct an arch. It is the same with the fore-legs of a horse. When they are bowed or arched very much forwards the animal not only can sustain his own weight, but he can also carry a considerable additional one on his back." Now I think no one will deny that this theory was very ingenious, but the question is, Was it true?

Mr. Butterwick's young friend next adverted to the horse's wind, which he said was not all right. In fact, he called him a roarer. "Oh, but," said Mr. Butterwick, "the best horses are always roarers. Roaring shows they have plenty of wind. You just take any ordinary horse and trot him sharply; you won't hear a sound. The reason is his lungs are weak, and he daren't inflate them; but my horse does, and he blows it out again in such a manner that there is no doubt whatever about his breathing capacity. And now I'll let you into a secret. When you want to buy a horse stand about three or four hundred yards from him, then if you hear a noise when he breathes buy him; he is worth his weight in gold." Now here, again, the question to ask is, not whether Mr. Butterwick's theorizings sound plausible and satisfactory, but whether they were true.

Again the somewhat horsy young man suggested another defect. He said the horse was in such a very poor condition that every rib he had could be counted. "Oh, but," said Mr. Butterwick without a moment's hesitation, "that is the very thing that first drew my

attention to him ; and your complaint proves that you have a very singular want of taste. I grant that it is little else but a matter of appearance, but a reasonable regard for appearances is what nobody ought to be without. Now I just ask you which is handsomest in architecture, a dead flat wall or a wall varied with columns and pilasters? Why, the wall with columns, of course, and so it is in everything. Some horses' sides are a perfect dead level of smoothness, and what can be more ugly? Then, again, if you see all the ribs when you buy a horse you are sure he has the right number. It is a very important thing in a horse that he should have the right number of ribs." Here the speaker was interrupted by his young friend saying that the horse's tail was only three inches long. "Oh, but," said Mr. Butterwick at once, "that is the one thing about him I think more of than anything else. Pray are you aware, young man, that every particle of living flesh, bone, and blood requires to be constantly supplied with nutriment ? But, if this is so, a horse with a long tail must require more corn than a horse with a short tail. The yearly waste and loss to the country that comes from furnishing nutriment to tails that are of no earthly use when they are nourished must be enormous. But, besides this, there is the waste of muscular force. Now, it is of the utmost consequence to economize a horse's strength. But even a child might know that to whisk a long tail must consume more muscular energy than to whisk a short one. However, you will learn about these things some day." Now, what can be more plausible, more consistent, and more convincing than all this? And yet the whole thing is nonsense. I wonder whether some of the plausible, consistent, and convincing theories and guesses of some of our scientific instructors are nonsense ! The fact is,

ingenuity in sufficiency will first guess anything on earth, and then prove it. Still both guessing and ingenuity, misleading as they are, are wanted. Guesses lead to discussion, and thence, now and then, to a discovery that is both new and true. Granted that nine hundred and ninety-nine of the scientific guesses of the day turn out to be addled, still, if the hundredth one is good, there will be so much gained.

After all, our popular lecturers, brilliant as their imagination sometimes is, rarely reach an *original* guess. "In their breathless race," says Dr. Elam, "for popularity and paradox, they have run forwards so fast that they have landed themselves high and dry about 2000 years backwards in the Atheistic philosophy of Democritus and Epicurus. The guess of modern times, that matter can neither be created nor destroyed, is but the old guess of Parmenides ; Professor Clifford's guess, that nothing exists but atoms and ether, is but the guess of Democritus ; and Professor Huxley's guess, that the eye was not made to see with, is but the guess of Epicurus, who said that "the eye was not made to see with, but, having been developed by chance, the soul could not help using it for that purpose."

Even in ingenuity, Professor Tyndall himself, admirable as his demonstrations sometimes are, hardly can come up in conclusiveness to the proofs of an eminent man of science, forty years ago, that it was a physical impossibility for a steamboat to carry coals enough to take her across the Atlantic, whilst Archbishop Whately's proofs that no such a man as Napoleon ever existed, were more consistent, more convincing, and more like truth than any of the demonstrations of our science-popularizers. But then the Archbishop, who wrote this demonstration to show that where ingenuity was sufficient anything

could be proved and anything could be disproved, was himself one of the most ingenious men who ever lived.

There is, I say, no limit to the possibilities of human ingenuity. There is nothing whatever that ingenuity in sufficiency cannot prove. Professor F. Newman demonstrates, in a charming manner, that the morality of the Sermon on the Mount, and of the Lord's Prayer, is low, debasing, and degrading ; and a Miss Edith Simcox, who has been blessed, or cursed, with an extremely ingenious mind, argues out admirably that Atheism, whether true or false, is a state of mind most favourable to virtue, and that to believe that there exists a perfectly holy, righteous, ever present, infallible, spiritual being for mankind to revere, worship, and love, is calculated to lead men into living mean, grovelling, and vicious lives.

Language is so imperfect an instrument, compared with what there is for it to express, that it can be twisted by ingenuity into anything whatever. The utterance of a saint can be proved more suited to a devil ; black can be proved to be white ; the grand scoundrels of history can be proved to be angels of light, and I doubt not that some day Goethe's Mephistopheles will be made out to be really a charming character. Such is the power of ingenuity. Still, however preternatural such ingenuity may be, it all comes to very little, for mankind quietly goes on believing in the good of good, and the evil of evil, just the same as before, because to do so is in the blood and in the heart, whereas the other is only in the brain, and that merely of some fantastic person.

Jesus Christ comes into the eastern world and fills it, and thence all others, with life, light, and warmth, inspiring mankind with noble instead of ignoble passions,

or, to use his own phrase, sending fire upon the earth, or baptizing men with the baptism of a fire that burns with ever-increasing warmth for hundreds of years. Then comes a cold-blooded northern analyzer, with his European scientific precision, his two-foot rule, and handful of avoirdupois weights, to weigh and measure thoughts and feelings expressed in phrases spoken in the oriental metaphorical manner two thousand years ago in one language, written down by fallible men in another, and badly translated into a third. Next, I suppose, we shall find him measuring light and heat, or the warmth of living joy by the yard, and then, if the results turn out different from some preconceived fancies of his own, denying them all, and calling them coldness, darkness, and death!

“Night’s candles are burnt out, and jocund day
Stands tip-toe on the misty mountain top.”

Thus sings Shakspeare, the poet. Then comes the cold-blooded analyzer with his dissecting knife, cuts the sentence up into pieces, and says, “This is all nonsense. Night’s candles cannot burn out, for she has none; jocund means laughing, and a day cannot laugh, and mountain tops cannot stand on tip-toe, for they have no tip-toes to stand on; so the whole thing is gibberish.” But it is the dissector’s talk that is gibberish, not the poet’s, for the latter is the utterance of a living soul, the former only of a dead brain.

What cannot ingenuity prove? Take the maxim of maxims, “Do to others as you would have others do to you.” Required to prove the maxim to be false, and that it must, if acted upon, be injurious to mankind.

Every individual has his individual characteristics. So true is this fact that it is quoted in the form of

popular proverbs universally. "Quot homines tot sententiae," "Chacun à son goût," are sayings in everybody's mouth. Now, a proverb is defined to be "the wit of one and the wisdom of all." But if these two proverbs are wise, and wise of course they are, the maxim "that you are to do unto another as you would have that other do to you" must be a pernicious maxim, for you would be doing things that must be injurious to him. I am fond of riding and would like my friend to mount me on a good, thoroughbred horse. This is what I would have him do to me. But according to the maxim, I must do to him as I would have him do to me. Therefore I must mount *him* on a good thoroughbred horse. But he is a bad rider, and is at once kicked off and killed. Again, Professor F. Newman tells the public that he is a vegetarian and an abstainer from spirituous liquors. One day a friend calls upon him about luncheon time, and the Professor, being a hospitable and an excellent man, who always does to others as he would have others do to him, at once puts before his friend some excellent beans, cabbages, oatmeal porridge, and toast and water. But his friend is neither a vegetarian nor an abstainer from spirituous liquors. Indeed, he requires what is called "support." Now, the beans disagree with him, and as he is provided with no wine "for his stomach's sake," he just goes home and dies right off of indigestion. Now here are two excellent people (each with a wife and several children) killed, and their families reduced to poverty and misery from nothing in the world but "doing to others as you would have others do to you," and these are only two instances of the falseness of this maxim out of possible ones absolutely innumerable. Therefore the maxim "do to others as you would have others do to you" is a false maxim, and

would, if acted on, be injurious to mankind. Quod erat demonstrandum.

Now if I, who am not an ingenious man, can thus demonstrate the wisest, truest, and best of maxims to be a foolish, false, and bad one, what conceivable feat is there that a person who *is* ingenious like Professor F. Newman, Professor Tyndall, or Miss Simcox, would not be up to. Of course none.

Thus, I was not surprised, in a late debate in Parliament, to read of men in one evening proving conclusively that the island of Cyprus was barren, fertile, rich, good for nothing, a valuable acquisition, and a useless encumbrance. And when another distinguished member proved indisputably, at the beginning of his speech, that our engagement to defend Asiatic Turkey from attacks of the Russians was a frightful responsibility, and at the end of the speech that there was not the slightest chance of the Russians ever thinking of attacking Asia Minor, I was not only not surprised, but I was delighted as well, for however nonsensical results taken as a whole may be, the processes of an active and ingenious intellect are always interesting to watch. I say I was not surprised at these things, because I knew all the time that the fertility of Cyprus and the danger of Turkey had nothing to do with the fertility of Cyprus and the danger of Turkey, but only with the political party the speaker happened for the time being to belong to. I also knew that some of the speakers were ingenious men enough to prove anything, or even to prove two contradictory propositions in one and the same speech.

The great logician, J. S. Mill, proved that we have no reason whatever for believing that *2* and *2* *really*, that is absolutely and necessarily, make *4* when added together, and that although mankind, with their narrow

and limited experience, find this in mere practice to be the case, it is only empirically that they do so.

Now all this time I am not saying a word against analysis, theorizing, analogy, ingenuity, and guess-work in their places, for each of them is undoubtedly useful.

As to Miss Simcox's astounding demonstration of the loveliness of Atheism, all one can say is that the theory is a monstrous or non-human one, just as a theory would be that men ought not to love their children. Some unnatural people do not love their children. "In the same way," said Dean Swift, "some unnatural people do not love or believe in God." The love of one's children has nothing to do with logical demonstration. It is deeper than any possible demonstration. Neither has the love of God anything to do with logical demonstration. It, too, is deeper than any possible logic. Logic and analysis are helpless whenever the question is one of the foundations of human nature.

It may interest some to see two lists of distinguished men, the one a list of believers in God, the other a list of Atheists, leaving out the names of those people who are now living.

I. Believers in God :—

Moses, David, Solomon, Pythagoras, Socrates, Plato, Aristotle, Zeno, St. Paul, St. Peter, Mahomet, St. Bernard, Thomas Aquinas, Dante, Kepler, Copernicus, Shakspeare, Luther, Spinoza, Voltaire, Rousseau, Bacon, Leibnitz, Locke, Newton, Hume, Descartes, Hegel, Kant.

II. Atheists :—

Jeremy Bentham.

For my second class I can only think of this one name that is sufficiently distinguished to be mentioned with those in the first class. There was one other man, Lucretius, who, as we know, was an atheist, but he was insane and

killed himself, so he does not count. In fact a man with nothing in him but intellect is necessarily insane, and very likely to kill himself. He is sure to be miserable, for he has nothing to be happy with — no faith, hope, joy, or passion of any kind with which to bring forth life and action. Instead of living faiths he has only dead opinions, and even these only wait for some new fact or new point of view to become no longer opinions. Such things are not men but only curious machines, or if they can be called human in any sense, they are only like some old men without a passion left in them, and who can only observe, criticize, watch, think, and ruminante like a cow.

Besides Lucretius, there was also Epicurus who has been called an atheist. But Epicurus left no writings, so we know very little about his opinions, and even what we are supposed to know about them, is apocryphal. Different accounts of his teachings are totally opposed to each other, and the descriptions we have of the way he and his fellow-philosophers lived together is so opposed to all we know of human nature that they cannot be true. We are told that they believed pleasure to be the only rule of life, that "duty," "right," "wrong," and "religion" were mere meaningless words, and then, in the same breath, we are told that they lived pure, virtuous, holy, and beneficent lives. Now, this we know must be nonsense. "A set of graminivorous metaphysicians," says Sidney Smith, "living together in a garden, and employing their whole time in acts of benevolence towards each other, carries with it such an air of romance that it is not possible to believe it can be anything else."

It may surprise some to see the name of David Hume in the first class, but I can only go by what he says himself. Let sceptics doubt, analyze, question, and deny, as

they may, "the whole chorus of nature," he says, "raises one hymn to the praise of its Creator."

Again, in the above two classes, I have confined myself to the Aryan and Semitic races of men. The Asiatic and Mongolian races are too grotesque to be taken into consideration. Nature is full of fun, but her grand joke of all always seems to me to be the Chinese people, who do everything exactly opposite to the rest of the world, from blackening the teeth to make themselves beautiful, to saluting their friends and acquaintances. We read that a Chinese when he meets a friend shakes *his own* hands with extreme cordiality, and then crosses them with profound reverence over his own stomach. But when the highest degree of veneration has to be expressed, he knocks his head nine times upon the ground.

To return to Professor Tyndall. Besides Dr. Bastian he falls foul of Dr. L. Beale, the distinguished microscopist, because he does not agree with him that diseases are caused by germs of parasites, which germs cannot be seen even with the strongest microscopes; and really the instrument has been brought to such perfection that if a living creature cannot be discovered by it, it must be very small indeed. I dislike the practice of indulging too profusely in illustrative anecdotes. And yet they undoubtedly sometimes help readers to realize and understand things when they would not do so otherwise. With the view, then, of showing the wonderful magnifying power of the modern microscope, I cannot think the following illustration will be considered out of place.

Mrs. Smith was a very poor woman, but her poverty did not render her unhappy, for she derived so much consolation from religion, and especially from the text that "it is easier for a camel to go through the eye of a needle than for a rich man to enter into the kingdom of

heaven," that she may be said to have led a cheerful and even happy life, until one fatal day when she managed to scrape together sufficient money to enable her to attend a scientific lecture where the powers of the microscope were displayed. After witnessing for some time sundry interesting magnifications, there at length appeared on the disc what the lecturer told the audience was the eye of a common darning needle. At once Mrs. Smith jumped up, seized her umbrella, and made for the door, crying out, "Laws a mussy, laws a mussy ! let me get out, let me get out ! why, an elephant could go through the eye of that needle, let alone a camel." I repeat that I think this anecdote will give the reader an idea of the wonders of the modern microscope. And yet these microscopes are utterly powerless to discover the germ of the cholera, of the small-pox, or of the typhoid parasite. There is, however, one advantage in this. If they are so hopelessly minute, each doctor can theorize about the manners and customs of his favourite germ to his heart's content, and be happy, for any disproof must be impossible.

We have seen that the distinguishing characteristics of our professors and popularizers of science is the ingenuity that comes from imagination preponderating over reason, common sense, and logic. This constitution of mind, when the mind is active, usually results in a prodigal manifestation of plausible theories, lively guess-work, happy similes, apt metaphors, unceasing self-contradiction, delightful versatility, and charming confusion. I have given my readers a few instances of guess-work, theory, and ingenuity. I will now give them a few of self-contradiction and confusion. Illustrations of the latter might easily be made to fill volumes, but I will try to keep my pen from wandering too far. He that ruleth his pen "is greater than he that taketh a city."

Why eminent men of science have often such confused minds arises, probably, from the talent specially in demand for cultivating physical science being observation, and from the fact that whenever there is too much *here*, there will generally be found to be too little *there*. Symmetry of mind is rare. Where observation is too abundant, correct inferences will be scanty. Dr. Barclay published a series of essays to demonstrate "the great want of logical precision there is in the mode of reasoning which forms the basis of our medical theories," which theories he shows to be, as a rule, little else but a mass of lame inferences from isolated and often biassed observations, ending sometimes in inductions in the highest degree ingenious and false. But now for my instances of confusion in our popular lecturers and writers about things scientific.





CHAPTER V.

ABOUT THE "CONFUSION THAT REIGNS IN THE SCIENTIFIC MIND OF THE PERIOD."

NINE out of ten materialistic philosophers are evolutionists, who tell us, first, that all living creatures are what they are by survival of the fittest, and that evolutionists, being the only people who think right, are therefore the people most fitted to survive. Secondly, they tell us that the mass of mankind is composed of foolish people, who are neither materialists, evolutionists, nor philosophers. Then all living creatures are *not* what they are by survival of the fittest, and the mass of mankind must be what they are by survival of the unfittest. Now, which do they mean? that living creatures are what they are by survival of the fittest or of the unfittest? Surely there is a little confusion here!

More confusion.

The analyzing materialist tells us that the ultimate reality of all the wonder and beauty of creation is the vibrating atoms to which they are traceable back. "You might just as well say," exclaims James Hinton, "that the ultimate reality of one of Beethoven's violin quartettes is the scraping of the tails of horses on the intes-

tines of cats." A lovely red rose causes delight, which can only be known by experiencing the delight. But the analyzer says, "No; the right way to learn about it is to trace it back to the antediluvian creature from whom we are descended," which creature, he will tell you in the next breath, is so undeveloped that he cannot tell one colour from another. Then we are to learn all about the delight the redness of a rose gives us by finding out its effect on a creature who cannot see it! I wonder whether *all* our instructors are Irishmen?

More confusion.

Mr. Huxley, in the "Fortnightly Review," for November, 1874, writes to prove man to be an automaton, without free-will; then all at once he astonishes us by turning round and saying, that "we are able to do as we like." Why, what in the world else does free-will mean but "being able to do as we like?" I must say I should like to see an automaton without free-will that can do what it likes. I wonder what the creature would look like? Perhaps it would be something like the showman's dog that ran about without legs — "Come up, ladies and gentlemen, and see the wonderful dog what was born without legs, what runs up a ladder with both his eyes blindfolded, fetches and carries like a Christian, and jumps through a hoop three feet four hinchess above the ground!"

I cannot say how I laughed at this unexpected somersault of Mr. Huxley's. Some analyzers of the causes of laughter have maintained that suddenness of surprise is at the bottom of all laughter. It was like the child's game of ferrets. A white rabbit runs into a hole; a ferret is put in to bolt him, and then out scuttles, not the white rabbit, as the children expect, but a black one. They usually scream with delight and laughter. Well, I

am almost ashamed to say how I laughed when I saw Mr. Huxley's black rabbit bolt out in this unexpected manner.

More confusion.

Mr. Huxley, as we have seen, teaches that man is an automaton without free-will. But then he says, "we live in a world full of misery, and the *plain duty* of everyone is, &c. &c." Then we *have* duties. But how can a man who has duties be an automaton without free-will? Having duties means being responsible, and that must mean being a free agent. It is human nature to believe in free agency. This is shown, as Kant observes, by the existence of such words as "can," "will," "ought," &c. Scientists deny free agency. But I prefer human nature to scientific nature. Men cannot help believing in free agency, though to explain it or anything else to the bottom is impossible. Trying to comprehend the incomprehensible or accomplish the impossible must necessarily bring a man to grief, like "poor old Grandpapa" of the nursery rhyme, who "broke his leg trying to spell Tommy without T." Now, I am sure we should all grieve to see our popular discourser on things scientific, who delights us all so much in the lecture-room, on his back for six months with his leg in splints; but if he will try to do what is impossible, he must, as I say, expect to come to grief. Explaining free-will simply means explaining life, or trying to cross the bridge between matter and mind, and we are no nearer doing that than was Mr. Darwin's anthropoid people of a good many years ago. "The chasm," says Professor Tyndall, "between material molecular processes and 'life' must ever remain intellectually impassable." And again he says, "It is by the operation of an insoluble mystery that life is evolved." "The consciousness," says Mr. H. Spencer, "of an

inscrutable power manifested to us through all phenomena has been growing clearer and clearer."

"Man," says Lotze, "can never find out, by physiological researches, the secret relation between soul and body."

"The fashionable philosophers of the day," says Dr. Elam, "speak, and speak eloquently, about 'duty,' 'choice,' 'right,' 'wrong,' 'virtue,' 'vice,' 'resistance to temptation,' 'determination,' &c., &c., but all such expressions are, on the automatic theory, unmeaning and ridiculous." And yet our teachers seem too confused to see this.

The consciousness that I can turn to the right or left at will is a fundamental certainty in my mind on a par with the certainty that I exist, and, like it, transcending in certainty any amount of demonstration addressed to the mere logical or reasoning faculties.

About free agency we have, on the one side, sundry arguments of scientists founded on principles that are uncertain, inasmuch as the real meanings of such words as "life," "force," "matter," &c., are forever inscrutable. On the other side, we have universal human nature, universal human conduct, universal human convictions, and universal human language. Besides, as Mr. Goldwin Smith says, the advocates of the automatic theory never act on it themselves, nor allow their thoughts to be ruled by it. And then he laughs at the strange idea of "an automaton becoming conscious that it is an automaton, reasoning about it automatically, and coming automatically to the conclusion that the automatic theory is true." In fact the whole thing is nothing but a medley of confusion.

"J. S. Mill," says Professor Jevons, "denies free-will. But he objects to the word 'necessity.' So he explains the latter word away so ingeniously that he unintentionally converts it again into the very free-will he has denied."

In the matter of free agency no one seems more confused than Professor Tyndall. His inconsistencies and rapid transitions are very curious. In one of his lectures he teaches us, like Mr. Huxley, that men are all mere automatons, without free agency. Scarcely has he uttered this but he holds an imaginary conversation with a criminal who, with logic very superior to that of the professor, has said, "If I am an automaton it must be wrong to hang me for doing what I could not help doing." To which Professor Tyndall answers, that "Society is *determined* that such men as you shall not enjoy *liberty* of evil action." Then men *have* liberty or freedom of will, and *can* act in a particular way when they are *determined* to do so. Now, which does the professor mean? His gymnastic feats succeed each other so quickly that one cannot depend on him for two pages together. Still each feat, taken by itself, is charming, and his demonstration at Birmingham that he was an automaton, without any power of spontaneous action, was simply beautiful. A sort of superior kind of clockwork he made himself out to be. And yet when one comes to think about it, it hardly can be clockwork. Clocks work in a uniform manner. If we look at a clock for ten minutes we know what it will do the next ten minutes. But if we listen to Professor Tyndall for ten minutes we do not in the least know what he will say the next ten minutes. But, perhaps, instead of a clock he is like Mr. Max Adeler's patent automaton combination step-ladder, which, though irregular in its working, was irregular in a regular way. That is, it was irregular within certain limits. But I must describe it.

The patent automaton combination step-ladder was a contrivance to answer three different purposes; being convertible into an ironing-table and also into a kitchen

bench to sit upon. Mr. Adeler tells us that shortly after the step-ladder arrived the servant girl mounted it to reach down a lamp from the wall, but just when she was in the act of lifting the lamp, the weight of her body unexpectedly put some hidden springs in motion, and in a moment the girl was on the floor with a broken leg, the lamp was smashed to atoms, and the step-ladder became an ironing-table. Upon this Mr. Adeler decided that the apparatus should be used as an ironing-table only, and so to this purpose it was put, till one night some one knocked up against it, whereupon the table, after giving two or three preliminary jerks, tearing three shirts to ribbons, and hurling the flat iron out into the yard, at length, after a few convulsive movements, became stationary in the form of a step-ladder again. "It became evident to me," says Mr. Adeler, "that the machine could be used with most safety as a kitchen bench, so I had it placed in the kitchen in that shape." But one day an unusually heavy scullery-maid sitting down rather too suddenly upon it, the apparatus went off in a violent paroxysm ; the legs trembled beneath it, and then after giving a tremendous jump, which hurled the girl violently against the kitchen-range, it jammed itself half-way through the window-sash, and remained there once more in the form of an ironing-table. Mr. Adeler tells us that after this the patent automaton combination step-ladder attained such a degree of sensitiveness that it would go through the entire drill on the slightest provocation, so he had to put it away in the garret ; but even there a rat would sometimes run against it in the middle of the night, when it could be heard dancing about the floor and getting into service as an ironing-table, a ladder, and a bench in rapid succession fifteen or twenty times before it settled down again.

Now surely, if Professor Tyndall is the automaton he describes himself to be, instead of a sort of cunningly devised clock, he must be constructed more after the manner of Mr. Max Adeler's "patent automaton combination step-ladder."

Every healthy, strong man, with a strong will, says his intuitive consciousness that he has free-will equals in certainty his consciousness of anything else in the world. Oh, but, says some dreaming analyzer, whose actions rarely extend beyond applying his right eye to a microscope, "appealing to intuitive consciousness is unscientific, and no test of truth ;" and then he begins to talk about what he calls facts, and inferences from them, which inference he calls necessary. But ask him how he knows that the inferences are necessary ones, and he can give no reason but that he is intuitively conscious that they are. So it comes to this, "my intuitive consciousness is right, and yours is wrong ; and I know this because I know it." Most people who have ever had to do with school-boys have met with this mode of argument. The fact is, one and all of us must trust at bottom to intuitive consciousness, and inability to see this is mere confusion.

Professor Clifford condemns intuitive consciousness altogether, and writes to show us that faith without proof, or only from intuition, is wrong. But then he finishes by saying that when a man retires within himself he finds something deeper than his own personality, which he knows he ought to obey, and which tells him that it is right to be beneficent. Then faith from intuition is *not* wrong. Now, which does he mean, or does he mean both, or does he mean neither, or does he not know whether he means both or whether he means neither?

A man with little else but senses and intellect will naturally enough disbelieve in free-will, for intellect is

only an instrument, and of course has no free agency. "It is not our intellect," says James Hinton, "that is the essential part, but our characters." A man says, "I will turn my thoughts to a matter," just as he says, "I will turn a handle," or, "I will use my muscles." But the handle has no free-will, neither have the muscles, neither has the intellect. The mere idea of any one of these things having a will is an absurdity. "Many a man," says J. Hinton, "is spoilt and ruined through thinking that his intellect is himself, and that his highest occupation is to cultivate it. Of course, it wants making sharp as a razor if possible. Still a man's first business is to cultivate himself, not his intellect only. Some men consider knowledge the all in all for its own sake, but a man bunged up with knowledge to the exclusion of everything else, is a dead man. He may be called knowledge-logged, like a water-logged ship that is so helpless it may be looked upon as a dead ship. Browning compares the spiritual death that comes from repletion of knowledge to—

"A lamp's death when replete with oil that chokes it."

Besides, half the so-called knowledge is, as Charles Lamb called all knowledge, only "our ignorance classified."

Our sharp, shallow scientists are always thinking they know when they do not know. I suppose, as J. Hinton says, it is because with all the talent some of them have they are without genius. "That which is not genius," says Hinton, "is always insisting that one or other of the not known things is knowledge;" and again he says, "the faculty of genius is that of knowing that he does not know." "We know all about a stone falling," says shallow Talent, "it is done by the force of

gravitation varying inversely as the distance." "We do not know why a stone falls," says genius, "for no one knows in the least the meaning of the word gravitation, or how there possibly can be such things."

As to knowledge, "it is," says J. Hinton, "not knowledge, but the *moral* faculty which is the true knowing faculty. It is the work of the *moral* faculties to interpret nature." If this is true, a man with only intellect and no moral faculty can know nothing, though, of course, he can go through any number of intellectual processes. Intellect by itself can only deal with certain resemblances, relations, and differences between things whose nature is unknown. But when the lovely things that are in the world cause a man delight, and wonderful things wonder, he is quite certain about it. This delight and this wonder are to him so much certain knowledge, and the true interpretation of what he sees—that is, supposing he is capable of delight and wonder.

More confusion about free agency.

"Education," says common sense, "is founded on free-will." "Learn your lesson," the boy is told, "or be whipped." The boy exercises his free choice and learns the lesson. But Mr. Huxley makes the astounding assertion that the fact of "a man being a machine or automaton renders education possible." I wonder how many hours a day he spends educating his watch. Several, I doubt not, for education where education is possible is a duty, and Professor Huxley I believe to be an excellent and conscientious man.

More confusion.

Professor Tyndall tells us that man, being an automaton, has no *power* to move a finger. He also tells us that "matter" contains within itself "the promise and potency" of all life. But potency means power. So we

are given to understand that undeveloped matter has power, but a developed man has none.

Nearly all scientists seem to me to have confused minds, but on no subject do they appear so confused as about free agency. The only original force conceivable by man is, as Sir John Herschel truly said, will-force. This I know I possess. So I myself want no proof. The best proof to others is my power of predicting action. I foretell to another man that in ten minutes I will kick a foot-ball, and in ten minutes I do kick it. Now this, whatever it may be to the comparatively insignificant part of a man called analysis, is, to a whole sane man using all his faculties, a satisfactory indication of my being a free agent.

By logic I can argue to myself that I am not a free agent. By direct consciousness I feel myself to *know* that I am one. Each of these opposite conclusions are founded *solely* on faith in the constitution of my own mind. The first comes from faith in my logical power of forming inferences from unknown premises (for all premises are at bottom unknown). The second comes from faith in my direct consciousness, just like the faith in my consciousness that black is not white. Now this second faith is to me far the stronger one of the two. And in this respect the great mass of mankind are like me, as is shown by every action of their lives. A few, but comparatively few, analyzing people, who are called men of science and metaphysicians, say the first faith is the strongest; so to them I suppose it is so.

Descartes tried to prove that animals were only automatons like clocks. Thus the automatonism of Messrs. Huxley and Tyndall is simply Descartesism applied to men as well—a process that never occurred to Descartes, but which the modern scientist is bound in

logic to carry out, inasmuch as he denies that there is any essential difference between a man and the small parasitic insect that, under certain circumstances, frequents the hair of his head—the former, indeed, being, as we are given to understand, lineally descended from the latter. In the beginning we are told was protoplasm ; protoplasm begat vegetables ; vegetables begat insects ; insects begat reptiles ; reptiles begat quadrupeds ; quadrupeds begat apes ; and apes begat men.

Dr. Carpenter gives a lecture at Glasgow to show that man is an automaton, and he defines "automaton" to mean something that is self-moving. But later on in the lecture he defines "automaton" to mean a structure which moves by a mechanism, which mechanism moves only in a certain way like a watch. But if it is like a watch, an automaton is not self-moving, for a watch is moved not by itself but by the maker of it. Again Dr. Carpenter defines a watch to be a self-moving machine made by man, and says, that a man is like a watch. Then a man must be a self-moving machine made by man. Now I call this quite a curiosity of confused ideas. Indeed, the mere writing it out makes me sea-sick.

Some writers have tried to reconcile the destruction of free agency with the preservation of responsibility. But this argues such a profundity of confusion on the part of these writers, that I will not insult my readers with supposing they can wish me to say anything about it.

More confusion.

One of our teachers is J. S. Mill, and he is called the clearest thinker of modern times. And yet Lord Balfour proves the following to be the upshot of his doctrines.

First, of truth generally, Mr. Mill says :—

"That a proposition cannot be at the same time both true and false, is a conclusion founded solely on our

experience, but we have no reason to suppose it to be a necessary truth."

About motives for conduct, Mr Mill's doctrines are:—

- (1.) That pleasure is the only possible object of desire.
- (2.) That men can desire things independently of the pleasure they give them.

About actions, Mr. Mill says:—

- (1.) That no actions can be disinterested.
- (2.) That disinterested actions must be adopted as the rule of life, if life is to be worth anything.

Mr. Mill also maintains:—

- (1.) That it is impossible to desire anything but our own interest.
- (2.) That it is possible to be disinterested.

About the grounds for our convictions, Mr. Mill holds that the intuitive certainty, that good is good, and the intuitive certainty, that two things that are equal to the same thing are equal to one another, are each of them without foundation. Still they are both respectable intuitions, and one as good as the other.

What can we conclude but that Mr. Mill's mind, full as it undoubtedly was, was a mass of confusion—something, perhaps, like the luggage van of the Scotch "Express" in August.

"There is nothing in logic," says Professor Jevons, "that Mr. Mill has not touched, and he has touched nothing without confounding it."

More confusion.

Professor Tyndall says, that he discerns in "matter" the promise and potency of all life. This of course is materialism, pure, and simple. But in another place he says, "the continuity between molecular processes of matter, and the phenomena of consciousness, is the rock on which materialism must inevitably split." Then there

is something besides matter. But again, in another place, after describing the wonderful birth and growth of living beings, he says, "matter I define as the mysterious thing by which all this has been accomplished." Then there is *not* anything besides matter. But again, talking of matter as consisting of atoms of carbon, hydrogen, nitrogen, oxygen, &c., he says that it is impossible to conceive these atoms as being anything but indifferent as to their own position and motion. Then there *is* something besides matter. Now I wonder whether the professor has the slightest idea what he means.

After admirably describing some wonderful manifestations of life, Professor Tyndall says, "Matter I define as the mysterious thing by which all these wonderful things are accomplished." Yes, but defining black to mean white does not make it white. Indeed, it remains just what it was before.

"Whatever criticism may tell us," says Dr. Mozeley, "that there *is* something we call spirit which is different from something we call matter, is a simple fact of our consciousness that we can no more get rid of than we can of our own existence." Our materialists give to matter spontaneous motion and other attributes of spirit, and then dub spirit "matter." But it is nothing but confusion of mind. As I say, giving "black" the attributes of "white" does not make "black" "white," nor alter it in the smallest degree.

More confusion.

Professor Tyndall says, that setting up a theory of a human soul to account for action, is transgressing the really scientific method of explaining the unknown in terms of the known. Then, according to Professor Tyndall, matter is more known than soul!!! I wonder what we shall be told next? I *know* that I have a

soul—that is, thoughts and feelings ; and I know exactly what these thoughts and feelings are when I experience them ; as, for instance, what gratitude is when I feel it. But who knows what matter is ? Ultimate atoms, perhaps some third-class scientist will say. But according to G. H. Lewes, and many wise men, there very likely are no such things as ultimate atoms. "Matter" means force or forces, another may say. But Professor Tait, Professor St. Mivart, and other eminent men of science, say that probably there are no such things as forces. Then what does Professor Tyndall mean by calling matter more known than spirit or soul ?

Mr. Huxley tells us that we do not know in the least what "matter" means, and that we know nothing whatever about the composition of anything as it actually is. No doubt Mr. Huxley's general teaching is made up of what he puts before the public as undoubted facts and irresistible inferences from those facts. Thus, as Dr. Sterling truly says, "he offers absolute ignorance as a support for the most dogmatic knowledge." But I suppose it is only "more confusion."

More confusion.

"It is," says Professor Tyndall, "by the operation of an insoluble mystery, that life is evolved." But in another place he says he "discerns in 'matter' the promise and potency of all life." Then the evolution of life is *not* an insoluble mystery. How can a thing a man discerns be a mystery to him ? Now, which does he mean ? My belief is, that the Professor deceived himself, and that what he "discerned" was an indiscernable thing ; that is to say, he discerned nothing. At any rate, he has been unable to make anybody else discern what he says he does, and I suppose he would have done so if he could. I do not think he is a man to hide his light

under a bushel if he can help it. In fact, nobody ought to do so.

More confusion.

Professor Tyndall's general teaching is that nothing exists but matter—that is, sundry atoms of carbon, hydrogen, oxygen, ammonia, &c., which develop themselves into all the innumerable manifestations of life. But in one place he says, “it is absolutely and for ever inconceivable that a number of carbon, hydrogen, and oxygen atoms (i. e. matter) should be otherwise than indifferent to their own position and motion.” Then something else *does* exist but matter. Now, which does he mean? If he means the last, he contradicts his whole teaching; if he means the first, there can be only one moral, namely, “let us eat and drink, for to-morrow we shall be carbonic acid, water, and ammonia.”

More confusion.

Professor Tyndall teaches that molecular motion produces consciousness. But in one place he says, “physical science offers no justification for the notion that states of consciousness can be generated by molecular motion. Now, which does he mean?

More confusion.

Professor Tyndall tries to prove to us that spontaneous generation (that is, new creation of new living things) is impossible. But he tells us in the same breath, that it did take place a long time ago. Then spontaneous generation is *not* impossible. Now, which does he mean? Professor Tyndall, H. Spencer, G. H. Lewes, and C. Darwin, all say that spontaneous generation took place a long time ago. But to a clear head, a kind of thing happening once proves not only the possibility, but the probability, if not the certainty, of its happening again.

No one sees the causes of things so well as H. Spencer

so long as he confines himself to comprehensible matters, but as soon as he tries his hand at incomprehensible matters, he becomes confused and self-contradictory ; as everyone does who tries to explain inexplicable things.

Mr. Spencer, teaching the conservation and persistence of force and the continuity of motion, says, that these things are indestructible. But in another place he says that evolution must issue in equilibration, and equilibration must end in complete rest. Then motion is *not* indestructible. Now, which does he mean ?

Again, he teaches that theism, pantheism, and atheism are all of them wrong, because they assume self-existence somewhere, and this assumption is vicious and unthinkable. But in another place he says that matter is "uncreatable and indestructible"—that is self-existent. Then self-existence is not a vicious and unthinkable assumption. Now, which does he mean ?

More confusion.

Matter, says the materialist of the period, can neither be created nor destroyed. Again, as we have seen, he says, by the mouth of Mr. Huxley, that at bottom no one in the least knows what the word "matter" means. Then, if he does not know what the word "matter" means, how can he know whether it can be created and destroyed or not? All he is justified in saying is, that he cannot conceive an unknown something he calls matter being either created or destroyed. But to call this confession of incapacity in himself a piece of proved knowledge about matter must be mere confusion.

Now, what can we say about all these contradictions, all these inconsistencies, and all this confusion amongst our most distinguished teachers, except what the editor of the "Louisville Patriot" said to one of the contributors to its columns. "The public," said he, "will put up

with a good deal, but really you go a little too far. Here, for instance, at the beginning of this last story of yours you mention the death of Mrs. MacGrimes, the hero's sister. She dies—you inter her in the cemetery—you give an affecting scene at the funeral, run up a monument, and plant honeysuckle upon her grave; and then in the twenty-second chapter you make a man named Thompson fall in love with her. In a page or two more she marries, and goes skipping about through the rest of the story as lively as a grasshopper. Now, really this sort of thing won't do. Then there is Captain Adolph Scott. In chapter twelve you state that he lost his left arm in battle, and that the other was amputated in consequence of an accident with a threshing-machine; and then, at the end of the twenty-fourth chapter, you say, 'Adolph rushed up to Marianne, threw his arms about her in a transport of passionate emotion, and clasped her fervently to his manly bosom.' Now, I only ask you how could he possibly do this if he had lost both his arms? But not content with this, a short time afterwards you describe him as 'sitting down at the piano in the soft moonlight, and playing one of Beethoven's sonatas with sweet, poetic fervour.' Why, the thing is absurd. Again, look here! In the first love-scene between Adolph and Marianne you say that 'her liquid blue eyes rested softly upon him as he poured forth the story of his love,' and then, only two pages afterwards, when a villain insults her, you observe that her *black* eyes flashed lightning at him, and seemed to scorch him where he stood. But I have not done yet. Look at the way you manage those Browns. First you represent Mrs. Brown as taking her twins to church to be christened. In the middle of the book you make her lament that she never had any children, and you wind up the

story by bringing in Mrs. Brown with her grandson in her arms just after having caused Mr. Brown to state to the clergyman that the only child he ever had died in its fourth year. And now," said the editor, "I will say no more, except that, unwilling as I am to discourage young men, I must tell you candidly that I think you had better go into some other line of business. I do not think writing fiction is your forte." I wonder whether some of our instructors in science had not better go into some other line of business ?

But I have not yet finished with our confused teachers.

The materialist tells us that inasmuch as higher life passes by insensible gradation into lower life, therefore lower life must pass by insensible gradation into no life at all. For example, inasmuch as the highly-developed apricot has passed by insensible gradation from the low-developed almond, therefore the low-developed almond must have passed by insensible gradation from some dead substance, such as a door nail. But as far as knowledge goes as yet, life and death are two totally different things, life power being opposed to and overcoming all the known natural forces. Thus the above assertion is merely the belief or guess of some credulous persons. They are mere assertions, which probably involve absurdities as incongruous as to say that inasmuch as a fiddle is made of wood and catgut, therefore wood and catgut are made of Christian principles, or any other gibberish. Well may Dr. L. Beale say that the unreasoning credulity of the skilled scientist often exceeds the vulgar belief of the ignorant bigot. "There is," says Dr. Beale, "no known analogy between what is called 'vital force' and any other force whatever. Now, this being so, is it," he asks, "common honesty for the experts to tell the public, as they unceasingly do, that all the operations of all living things

are to be explained upon physical principles?" Nonsense, Dr. Beale, it is not dishonesty, it is only confusion! The cleverer the man, the more confused he is apt to be. A pig is never confused, for he has only two ideas, barley-meal and straw.

"No interpretation," says Dr. Beale, "of the physical forces helps in the least degree to explain the phenomena which occur even in the smallest particle of *living* matter." The pretended explanations are nothing but confusion. "Instead," says Dr. Beale, "of the forces of nature accounting for life, it is more probable that it is life which controls or directs the forces of nature." Still, to the opposite class of minds, it undoubtedly seems easier to imagine dead matter governing mind than mind governing dead matter. People who belong to this class even tell us that matter governs the forces of nature, like Mr. Huxley, who says that "a particle of jelly guides forces." But I suppose it is only confusion. As to jelly guiding forces, Dr. Beale simply says it is not true.

Professor Tyndall may be looked on as a spokesman of that class of intelligence, which says that life and mind depend on, and are the results of dead matter. Charles Kingsley may be looked on as a mouthpiece of the opposite class, which says that matter depends on, and is the result of, life and mind.

"The soul," says C. Kingsley, "secretes the body as a snail secretes its shell, and the body is but the expression in terms of matter of the stage of development to which the living being has arrived." On the other hand, the materialist says that dead matter makes mind—that is, some of them do, for the differences amongst them are unlimited. Some, like Mr. G. H. Lewes (who, by the way, only repeats the teaching of Aristotle), say that matter and mind are two sides of the same thing—the

statical side (or the side that is at rest) and the dynamical side (or the side that moves). But which is most likely to be the agent in all change, the side that is at rest, or the side that moves? The materialists say the former. C. Kingsley says the latter.

According to Professor Tyndall and the materialists, the agent in all change is the statical side, or matter. But all human nature, as shown by all human language, is against them. "I turned my body round," everybody says, not "my body turned me round." A French general, at the commencement of a battle, finding his body to be trembling, said to it: "*Tu trembles, vile carcasse! tu tremblerais bien plus si tu savais où je vais te mener.*" Ordinary language is a better philosopher than the analyzing materialist. For the one represents the whole of human nature that has gradually been growing up for thousands or millions of years, whereas the other is but the fancy of some single fanciful reasoner, playing on his one-stringed fiddle, analysis.

The word "vitality" has been the parent of any quantity of confusion.

Some of our would-be instructors condemn altogether such expressions as "vitality," "vital power," &c., but they do not agree upon any words to use in their place. Thus the only result of their condemnation, if successful, would be to destroy a portion of the English language, with the ideas belonging to it. And no doubt this would be only in keeping with the whole system of analytic science, one object of which seems to be to destroy certain parts of human nature, and those the highest parts. It is true that in one place, instead of "vitality," Mr. Huxley makes use of the term "unknown subtle influences," but I really do not see what he gains. Perhaps he thinks his new phrase has a prettier sound,

and I am not sure but that he may be right; still, if everyone is to alter words according to his fancy, merely because he thinks other words sound better, language would get (to use an American phrase) "rather mixed." But after all, the thing is perhaps only confusion.

Mr. Huxley, denying vitality, but believing in "unknown subtle influences," is like Mr. Atkinson, Miss Martineau's pet atheist, who denied God, but believed in "a fundamental something beyond sense, and underlying all change." Rather inconvenient these substitutions of long paraphrases for single words, thus increasing the bulk of books too bulky already, though undoubtedly good for the printers, publishers, and bookbinders! Still authors do not usually write their books primarily for the benefit of publishers. Indeed, a certain antagonism has hitherto been supposed to exist between these two classes of people. "Now Barabbas," said Byron, "was a publisher." Campbell, the poet, once, at a public dinner of literary men, proposed the health of Napoleon Bonaparte. It was about the time of the battle of Waterloo, so at first there was a little hesitation amongst some of the company; but upon Campbell getting up and explaining that Napoleon once hanged a publisher, the toast was drunk with enthusiasm.

"It may," says Dr. Beale, "be unsatisfactory to attribute phenomena to a peculiar power of movement we call 'vitality'; but it is more honest to do so than to insist that the movement results from physical changes, whilst we know that not one of the physical changes of which we have any knowledge is competent to cause them!" "No doubt," says he again, "the materialists pretend to explain 'life' by talking about 'molecular changes'; but such explanations explain nothing, and are but impertinent fictions of the imagination." Dr. Beale

calls them "impertinent fictions," but more likely it comes from confusion of mind ; and no doubt these people really think that the term "molecular changes" explains something. Stupidity is far more common a thing than moral delinquency. Man is a well-meaning creature in a general way.

Vitality is an inscrutable something. Even a living cabbage defies all the *known* forces of nature when it grows upwards instead of obeying gravitation and growing downwards ; and as to man, with his passions and thoughts, he plays "duck and drake" with all the *known* forces to an indefinite degree.

Here are on the points of three penknives three minute particles of matter, transparent, structureless, and colourless, and identical even when magnified to the size of an ox. And yet they are not identical, for the vital powers within them are so different that, if undisturbed, the one would have grown till it became a man with a Godly and Christian soul ; the second would have become a utilitarian philosopher, with a Jeremy Benthamitist soul ; and the third would have become a jelly-fish, with no soul at all to speak of. Thus the difference between these minute particles is enormous, and yet what is this difference ? All we can say is that it is a difference of vital power, and what this is we know no more than the jelly-fish itself.

I fancy I hear a materialist saying to me, "What do you mean by a Godly soul ? I see nothing Godlike in men." Well, perhaps not. As a rule a man's soul is about as divine as he feels it to be. Hobbes, the materialist, called the life of man short and dirty, which is just about what I should have expected he would have called it. Schopenhauer, an unhappy misanthrope, said that the miserable universe was the result of chances,

which chances happened to have turned out wrong ; and James Hinton, a surgeon, a man of science, and a Christian in the highest sense of the word, says, "I cannot express how beautiful, how rich, how good, how absolutely beyond all that heart can wish or imagination paint, I feel the world to be, and this our human life. I know it by my own." Verily to the pure all things are pure, to the good all things are good, to the scoundrel all things are rascally, to the joyless all things are joyless, to the grovelling all things are grovelling, to the holy all things are holy, to the pig all things are barley-meal. Men think their opinions come from profound processes of their understandings, when in truth they come from what they themselves are. Schopenhauer was an unhappy man, so he thought there was something radically wrong with the constitution of the universe. "It would be difficult," says an American writer, "to convince a dog with a tin can full of pebbles tied to his tail that there is not something wrong in the constitution of the United States."

But I will return for a moment to our three minute particles of matter on the point of a penknife, for I think I see my way to extracting from them another instance of confusion of mind.

The materialist disbelieves in God because, as he says, it is not possible to believe in what cannot be seen, heard, felt, or traced. But he says he does believe in "mysterious influences" that turn out a man, a utilitarian philosopher, and a jelly-fish from these three minute particles of transparent matter which are identical in structure. Then it *is* possible to believe in what cannot be seen, heard, felt, or traced. Now, which does he mean ? Or does he mean both ? Or does he mean neither ? Or, again, does he not know what he

means? I suspect this latter is the real explanation, for he is often a simple sort of man with all his queer clevernesses.

I repeat that life is utter miracle and mystery. Not a bit of it, says the shallow materialist, it is a mere question of molecular arrangements.

"Molecular forces," says Professor Tyndall, "determine the form which the solar energy will assume. In the one case this energy is so conditioned by its atomic machinery as to result in the formation of a cabbage, in another it is so constituted as to result in the formation of an oak."

"Now all this," says Dr. Beale, "is simply verbiage, meaning nothing in the world else but that cabbages and oaks want light and heat." Whole volumes could be written in this style without learning a thing. What we want to know is what is meant by "molecular forces," by "conditioned," and by "atomic machinery." Unfortunately nothing is settled about molecules, and about atoms our scientists are all at sixes and sevens. Professor Thompson rejects all distinction between the two, and G. H. Lewes says that the existence of "atoms" probably is only a guess. Thus the materialist who explains things by molecular changes explains nothing, and is only like the immortal member of Parliament who defined an archdeacon to be a man who discharges archidiaconal functions, only the latter had most reason of the two, for, at any rate, it is known that there are such things as archdeacons. But "molecules," as far as our present knowledge goes, is merely a term employed for convenience, though no doubt it is a useful enough peg to hang talk and ideas upon.

"Professor, how do you account for this peculiar modification of living structure?"

"I will explain the thing to you," answers the oracle, good-naturedly. "The modification you speak of is simply the consequence of the molecular changes that have taken place in it."

"Doctor, how do you account for some people being born dumb?"

"The way," answers the oracle, "we account for this circumstance, is by the fact established both by experience and observation that some people are from their birth found to be deprived of the faculty of speech."

"The object of language," said the French wit, "is to conceal thought." Amongst some of our modern scientists, the object of language seems to be to conceal ignorance.

Confusion of mind about "vitality" is without limit. Dr. Beale has proved that no analogy has ever been discovered between vital power and any known forces, and yet his opponents go on talking their old talk, though they are obliged to leave Dr. Beale's proofs alone. They do not even attempt to disprove them. It is true that Professor Tyndall calls Dr. Beale a mere microscopist, but this hardly amounts to a conclusive demonstration. The Professor, I am sorry to say, even seems to lose his temper, and actually so far forgets himself as to hint that Dr. Beale is a Christian; but perhaps he did not consider at the moment what he was saying. Calling names and avoiding discussion is, I fear, sadly symptomatic of a bad case. Dr. Beale calls it, "like a schoolboy who throws a stone and then runs away."

"No one vital action," says Dr. Beale, "has ever been accounted for by physics or chemistry, and the idea that ultimate molecules of matter arrange themselves in such a manner that living tissue results is supported by arguments of about the same degree of importance as those which might be urged in favour of a theory that West-

minster Abbey resulted from the properties of the stone of which it was built." Again, he says that "the assertion that the phenomena of life are to be accounted for by properties of material molecules is a mere dictum of pretentious, self-asserting authority, misleading, confusing, and untrustworthy." Well, it may be pretentious self-assertion, but I should be more inclined to think it only confusion of mind. The assertors, I dare say, believe their assertions, only they cannot see the jumble they have got in their heads.

Materialists profess by means of analysis to explain the composition of living matter. "But," says Dr. Beale, "the composition of *living* matter is unknown, because matter *must* be dead before it can be analyzed." Thus all the beautiful analyses of *living* matter with which we have been regaled for many years are really only analyses of *dead* matter. This bit of confusion is charming. "The formation of a living organism," says Dr. Beale, "is a miracle that cannot be explained by any laws yet discovered." "No one," he says, "who has formed a true conception of the nature of a living particle can believe in there being the slightest possibility of such a thing ever being manufactured."

Of course I know that the words "miracle and mystery" are tabooed by the third-class scientist of the period; but wise men know that at bottom there is nothing else. "Everywhere," says Charles Kingsley, "skin deep below our boasted science we are brought up short by mystery." Indeed, the greater the real knowledge the more wonderful, more incomprehensible, and the more mysterious everything is. Children see little mystery anywhere. Animals see it nowhere. Men of genius see it everywhere. I always look upon the genuine materialist, who thinks everything understood or under-

standable, as upon a strange dead-alive creature, suffering under a sort of fatty degeneration of the intelligence, with all the natural feeling, passion, poetry, wonder, reverence, religion, and life analyzed out of him.

"Life" is a sempiternal miracle and mystery, and yet our materialist tells us there is no mystery in it. It is, he says, perfectly comprehensible, being simply due to the molecular arrangement of the atoms; and this is, as we have seen, actually given to the public from the scientific pulpits as an explanation! And not only that, but it appears to be given in perfect honesty and good faith; at least, I have carefully read all the reports, and I have never seen any mention made of any appearance like a tongue being put into either the right or left cheek of the lecturer, though no doubt the reporters may have always been attending only to the words spoken, and not used their eyes. Still I do not doubt the good faith; for sadly common as dishonesty is, confusion of mind is far more common, especially amongst men of science, who are most of them perfectly honest.

More confusion about this word vitality.

"Many people," says G. H. Lewes, "speak of 'vitality' as a force. They might just as well call mortality" (that is, absence of vitality) "a force." Now, this is the same as if Mr. Lewes were to say "a man told me he had been knocked down by the force of a blow. But this expression was as absurd as if he had said, I was standing still near a man, and I remained standing still from the force of his not hitting me a blow." Perhaps in this case the confusion arose from vitality and mortality both ending in tality.

Now, what are we to say about all these astounding instances of mental confusion amongst some of the most eminent men of science of the day? The Irish are laughed at for their "bulls," and everyone has heard

all sorts of absurd stories of incongruous ideas from muddle-headedness. But is it possible to think of any instances of Irish bulls or of entanglement of ideas more ludicrous than some I have given above? I think not. Still, I will see what I can do, only unfortunately I have a bad memory for absurd stories.

Paddy is waiting for his friend, who arrives sooner than he expected him. "How is it you're here so soon?" he asks, "sure but ye must have missed yer train."

Two men are going to shake hands with each other; but just before doing so one of them, an Irishman, finding out they are both mistaken, cries out "faix, but it's nayther of us."

An Irishman was observed several times turning a small looking-glass first topside down, and then the right way up, each time looking at the reflection of himself in it. At last he gave it up completely puzzled, and said, "Well it's the quarest thing in the worreld. I look at meeself in the glass, then I turn the glass wrong end dhownd, then I look at meeself again, and mee face is still the rright way up, the same as before."

The Irish have much family affection. A Paddy once enlisted in the 75th Regiment, in order to be near his brother, who was a corporal in the 76th.

"How many of you were dining together?" an Irishman was asked. "Four," was the answer, "and I'll tell ye who we were—there was meeself one, Flannigin two, the two Grogans three, and—and, why who was the fourth? Faith I'll begin again," and he counted off on his fingers, "Flannigin one, meeself two, the two Grogans three, and—well, for the life of me I can't remember the fourth, but I know there was four of us."

"I," said a lunatic in an asylum to a visitor, "am Alexander the Great." "Why, how is that?" was the

answer, "the last time I was here you were St. Paul." "Yes, I know I was," said the man, "but that was by the first wife."

A Dutchman in the oil district of America let his field to a company on condition of receiving one-eighth of the produce. But the produce was unexpectedly rich, so he wanted a new bargain to be made. He said that only one-eighth was not enough, he must have one-twelfth. The company was accommodating, and agreed to his demand.

A German shoemaker, in New York, had his wife up before the magistrate for getting drunk on schnapps and then becoming violent and unmanageable. The magistrate proposed sending her to prison for six months, but the husband objected to this, as he did not want to lose his wife's services for so long a time. "All right," said the magistrate, "then what do you say to a fine of ten dollars?" "Dat will do first rate," cried out the satisfied Teuton, and drawing out his pocket-book, he paid the money and left the court with his wife, highly gratified at the result of his appeal to the law.

"The moon," said a Paddylander, "is twice as useful as the sun, for it shines at night, whereas the sun only shines in the day - time when we have light enough already."

Now these stories of confusion of mind are very absurd, but I must say that none of them make me laugh like some of the confusions of some of our confused teachers of physical science; indeed, these latter delight me so much that I cannot refrain from putting down a few more instances.

The principle of the doctrine of evolution is, that new creatures have never been created for the first time since chaos, and then almost in the same breath we are

told that when the right time came, a snake was born with legs and thus became a lizard. Then new creatures *have* been created for the first time since chaos. A creature with legs is not the same as a creature without legs. Again, we are told that the lizard's legs having *accidentally* grown, it survived because its legs made it fittest to survive. But this is mere confusion, for "accident" is only a word used to express ignorance of cause. A man tosses a halfpenny, and says it turned up heads *accidentally*. But this only means that it turned up heads because it was prevented by causes of which he is ignorant from turning up tails. Oh, but, says another developist, the legs gradually grew in the course of ages in consequence of being acted on by the forces of nature, such as heat, cold, electricity, &c. He might just as well say that a chair turns out to be a chair by being acted on by the forces of nature. The fact is, the human mind cannot conceive the existence of any created thing *suited to a purpose* without a creating cause somewhere, consisting at least of desire, idea, and power. Without the desire, a carpenter would never wish to make the chair; without the power he never could carry out his wish, and without the idea it would be just as likely to turn out a table as a chair, but, in fact, it would be neither one nor the other. The evolutionists tell us that cows in Africa being *accidentally* born with longer necks, could reach higher branches of trees than the others, and so in time long-necked giraffes became developed. But without some desire or striving somewhere no change could begin, without power none would be accomplished, and without a definite idea the cow would be born just as likely with a longer tail as a longer neck.

The doctrine of evolution may be true more or less,

little as it signifies whether it is or not. Still, the inference from it of the third-class scientist that *chance* is the only law of the universe, is ludicrously false. Instead of chance, it is the same Divine Spirit—the same God in whom all living things live and move and have their being, making them unceasingly strive after more and higher life, from the plant that stretches out its tendrils towards the light and sun, up to those men who pass their lives unceasingly reaching out after more goodness, more righteousness, and more Godliness—that is to say, after more and higher life. The strivings of the lower creatures are inarticulate strivings. But man, whose nature it is to put his longings into words, strives with prayer and praise. Some day the ideas of our men of science may perhaps, by the process of evolution, rise as high as those of St. Paul: “Know ye not,” says he, “that ye are the temple of God, and that the spirit of God dwelleth in you?” But they are very far behind yet.

Of course we do not all strive after more righteousness. Still we all strive after more and higher life, according to our lights, though the interpretation of the term “more and higher life” undoubtedly varies immensely. The British “navvy” thinks it means more beer, the politician thinks it means more power, the girl more admirers, the sportsman more horses, the cricketer more “runs,” the doctor more “cases,” the lawyer more briefs, and the child more toys; whilst the clap-trap scientific lecturer thinks it means more notoriety, and the cynical, good-humoured, pleasant, and heartless man of the world in large towns thinks it means more dinners, more scandal, and better wine. Even the third-class scientist himself, who believes nothing, hopes nothing, and loves nothing, even he strives for something, for he passes much time

analyzing the human liver, in order to discover what morbid secretion it is that produces faith, hope, and charity, and causes men to sing such strange and unmeaning songs as "Holy, holy, holy, Lord God of Hosts ; heaven and earth are full of thy glory ; glory be to thee, O Lord, most High ;" and I can assure my readers that this last sentence is no exaggeration of the materialism of the period. Mr. Huxley actually tells us in so many words that knowledge can "only be obtained by studying matter, and that the religious feelings may be brought within the range of physiological inquiry ;" and then he proposes the problem, "What diseased viscus may be held responsible for 'The Priest in Absolution ?'" This Mr. F. Harrison justly calls "materialism, and materialism not very nice of its kind."

The proper regulation of human life and conduct, and hence increase of happiness, is confessedly the object of all knowledge ; and the best way to learn this is to analyze viscus!!! Well, time only can show. The plan is totally opposed to the whole practice of mankind in all ages. Still, as I say, time I suppose will show. Hitherto the student who wished to learn about religion in mankind has first studied his own heart and then the manifestations of religion within historic times—magnificent buildings, gorgeous ceremonies, sublime poetry and music, righteous conduct, and Godly lives. But all such modes of acquiring knowledge Mr. Huxley pronounces to be "barren." The only fruitful way is to study matter. So in future we are to examine viscus through a microscope ! In this way, and in this way only, says Mr. Huxley and his disciples, shall we arrive at dependable knowledge. Indeed, one of the latter, trying to carry out his master's theory into practice, came to the conclusion—by anatomizing after death the livers of several distinguished

criminals, and also of some exemplary men who, whilst in the flesh, had "visited the fatherless and widows in their affliction, and kept themselves unspotted from the world"—I say he came to the conclusion from all these livers being identical in composition that there was no difference between the two classes of men; and consistently acting up to his discovery, he never locked his front door at night. Of course Mr. William Sykes, the burglar, soon paid him a visit, when our Huxleyite, hearing the noise downstairs, showed great presence of mind, and, being an active young man, slid down a water-pipe to the ground, and went to get assistance from his neighbours. When he returned with a few of them he found his wife murdered, children screeching, and money-box gone. Besides which the scoundrel had actually thrown his microscope downstairs and broken it to shivers.

Men and women love. Hitherto, since the world was made, they have judged of each other's affections by the living manifestations. They have approached the question from the spiritual side. A glance, a blush, a touch of the hand, a thousand looks, words, and actions, symbols of the spirit within that inspired them. And now all this is to be changed!

I wonder whether Mr. Huxley was ever in love. If so, how did he make his declaration? I doubt not he is an excellent, conscientious man, who acts up to his own teaching, so I suppose it was somewhat as follows: "Come to my arms, my own Angelina, for I have discovered everything. No more coyness, no more pretence of avoiding me, for only pretence I now know it to be. Denial is vain, for I yesterday put a minute particle of viscus that had emanated from your charming person under a lens of the very highest magnifying power

(a Dollond), and now I know, I *know* that you love me." I wonder how it answered.

To return to evolution.

Professor St. Mivart calls the evolution theory "a puerile hypothesis," and undoubtedly he is right if evolution means survival of fittest varieties that *accidentally* arose. But if evolution is defined to mean the evolution of species by survival of fittest varieties that arose from the Divine creating power within them, I do not see that it is puerile even though it may turn out to be false, or only partially true. The puerility and confusion is in the word "accident," though not *only* there. For instance, the evolutionist says that the doctrine of evolution is true. But he also says that all things thought, felt, or done by any man are merely phenomena resulting from his environment. Then the evolutionist's belief that the doctrine of evolution is true is only a phenomenon resulting from his environment! Alter his environment sufficiently, and the doctrine will become false. In fact, nothing is true and nothing is false. There are only changes of environment.

A very little more development, and our evolutionists will have risen to the height of the Yankee nihilist who said, through his nose, "There is nothing true, there is nothing new, and I don't care a d---n."

The natural-selectionist says that evolution accounts for all variations in animals in the same way that men, with time, can produce one breed of dogs with long legs like a greyhound, another breed with short legs like a spaniel, and another breed with no legs at all, like a Skye terrier. Yes, but men bring all this about by design. So this simile of the evolutionists tells against themselves. They may or may not be right that chance is the great creator of the universe and all things that are

therein ; but to use the above illustration to show how this is the case is only confusion of mind.

Evolutionists say that natural selection accounts for the existence of all living things by survival of the fittest. But this, again, is confusion, for it does nothing of the kind. It only accounts for the non-survival of the unfittest. The legged antediluvian reptile ran about, eat up all the food of the legless creature of the period, and so the latter, having nothing to eat, naturally died. It was unfittest to survive, whereas the legged reptile was fittest to survive. But how the reptile ever got legs, and thus became fittest to survive, natural selection not only does not explain, but it does nothing towards explaining. Some Darwinites say, as we have seen, that the reptile got his legs by chance; but this is not an explanation, but only confusion, for chance, as I said a page or two ago, is only "ignorance of cause" in one word instead of three. It "chanced" to be a fine day, means "it was fine from causes of which we are ignorant."

All the order and the uniformity which are observed to reign in the universe *must* be the results either of chance or design. But our materialists tell us they are the results of "laws of the universe." But "laws of the universe" only mean at bottom the order and uniformity that are observed to reign in the universe. Thus what we are told amounts to this, "that the order and uniformity which are observed to reign in the universe are the results of the order and uniformity that are observed to reign in the universe ;" which is the same as saying that the orderly arrangement of chess-men at the commencement of a game is caused by the orderly arrangement of the chess-men at the commencement of a game. Accounting for circumstances by "laws" is nothing but confusion.

Our materialists will not confess to design, for it is opposed to the whole teaching of their whole lives, and few of them will openly confess to chance (or the fortuitous concourse of atoms of Lucretius), for they know that the common sense of mankind would hoot at them, as it has always hooted at Lucretius; so they have recourse to "laws," which, as we have seen, lands them in inanity.

Mr. G. H. Lewes denies design because many things in nature seem useless, as, for instance, the gills of a land salamander's tadpole. What, says he, can it want with the gills of a fish? But this, again, is confusion. Men judge by general rules, not by occasional apparent anomalies, which anomalies (as a wise man believes) would with perfect knowledge turn out to be no anomalies at all. Men judging by general rules decide that eyes are to see with. Some few people, though, with beautiful-looking eyes, are stone blind. But these anomalous cases do not interfere with the general rule, neither with the inference from it.

Exclusive habits of analysis lead to endless confusions.

Here is a piece of delicious sweet bread that supports the life of my body. What is this bread? An analyzer comes, traces back, and tells me it is really only sundry gases and earths. But this is not true. The gases and earths may be something, but they are certainly not bread, if for no other reason than that one is good to eat, and the other is not.

A highly-developed Christian man worships God; and this worship supports the life of his spirit. But what is this God? An analyzer comes, traces back, and finds that some primitive savage tribe worship a being they, with awe and reverence, call "The Great Thief"; this, in fact, being the highest praise they know. So the analyzer tells the Christian that *his* God is no better than

the savage's God. But this again is mere confusion of mind—quite as much so as calling bread sundry gases and earths, for it is calling one thing at the present time under present circumstances another thing at another time under different circumstances.

Analysis and anatomy are, of course, useful for medical purposes, but as an explanation of life they are nothing.

"There have been curious speculations," says Ruskin, "as to the conveyance of consciousness by brain waves. What does it matter how it is conveyed? The consciousness itself is not a wave. It may be accompanied by any quantity of quivers and shakes of anything you can find in the universe that is shakable—what is that to me? My friend is dead, and my vibratory sorrow is not one whit less or less mysterious to me than my old, quiet sorrow." In fact, to think that the quivers and shakes explain in the smallest degree "life" is mere confusion.

"Hoping to discover," says Ruskin, again, "by the analysis of death what can only be discovered by the worship of a life, is a stupid perversion of science." Even to ordinary common sense the materialist's inferences are often manifestly false and illogical. He takes some faith, belief, or passion. He traces it back through the whole living creation until it is reduced to almost nothing in some low organism, and then he infers that the faith or the passion is therefore of little or no significance. To act from duty is noble, says mankind, and right is eternally right, and wrong is eternally wrong. "Pooh, pooh," says the materialist, "what you call duty is only a peculiar vibration in the *medullum oblongatum*." Holy, holy, holy, Lord God Almighty! "Pooh, pooh," says the materialist, "we can trace the religious instinct back even to the lowest savages." Some day we behold a face of extreme loveliness. "Pooh, pooh," says the materialist,

"there is a grinning skull beneath ; that is the real thing." But the wretched, dead man is totally wrong, and hopelessly confused. It is the lovely face that is the real thing, and the grinning skull that is nothing. Newton's deductions and calculations about the heavenly bodies were wonderful. "Pooh, pooh," says the materialist, "germs of the calculating principle can be discovered even amongst the Hottentots, who can all count to five, and some of them even to ten." Yes, but a germ is nothing, and full development is everything. The mighty elephant is no less mighty because it was once a tiny, new-born thing, little more than a ton and a half in weight. "'Dust thou art, to dust returnest,' was not spoken of the soul," says the poet. "Pooh, pooh," says the materialist, "we can trace ideas of this kind down to the lowest savages." Now, all this indicates utter confusion of mind. A strong, clear head and unbiassed thought infer from universality of a principle the importance, not the nothingness of it.

If a friend of mine were to tell me that he was descended from the man in the moon, I should immediately look about for the nearest lunatic asylum to put him into. But if on inquiry I found that all my friends believed the same of themselves, I should think twice about it. If on inquiring farther still I found that the whole of mankind, with the exception of the criminal class and a few people, mostly Germans, calling themselves philosophers, who passed their lives apart from their fellow creatures, enveloped in tobacco smoke ; I say, if I found that, with these few exceptions, almost the whole of mankind had the same belief in some form or other ; that all their words and actions were founded thereon, and that the more Godlike and exalted the man, the more firm and even passionate was his conviction

about his descent from the man in the moon, whilst the criminal class was almost completely without the belief, I should think still longer before I put my friend into the asylum. But if, on carrying my investigation still farther, I found that germs of the same belief could be traced even amongst the lowest savages, or, going lower down still, amongst the animals themselves, I should then come to the conclusion that the belief of being descended from the man in the moon was the truth—infinitely imperfect perhaps, but still a glimmering of some universal truth, the full meaning of which was beyond the mind of man to conceive. And if, after making all these investigations, I looked at myself and found that I was completely without this universal belief, I should immediately look about for the nearest lunatic asylum to put *myself* into. For I should consider that I must be a strange, abnormal being, wanting, most likely, in some necessary moral qualities, passions, or natural affections, and that I was therefore unfit to go at large.

Faiths and beliefs depend, as Mr. Herbert Spencer truly says, upon the feelings and passions. The man of noble and Christian passions will have noble beliefs ; the man of ignoble passions will have ignoble beliefs.

Analysis by itself explains little else but the limitation of the analyzer's own mind. Analysis tells us that "a chair" means woody fibre, or (tracing still farther back) a certain combination of hydrogen, oxygen, azote, and earthy substance. But in telling us this, analysis tells us a lie. "A chair" means a four-legged thing to sit on. Nobody can sit on hydrogen or oxygen. Again, analysis tell us that Christianity, duty, free-will, right, wrong, holiness, and godliness, are only superstitions of half-civilized people, or (tracing back still farther) only automatic tremors of the *medullum oblongatum*, and

of the nervous ganglionic centres. But in telling us this, analysis tells us lies. Christianity no more means this than a chair means sundry gases and earths. In so defining "Christianity," and "a chair," all that analysis does is to leave out the whole distinctive meaning of both the one word and the other.

It cannot be too often repeated that the full development is the real reality, and the dust from which it is supposed to spring (whether it does or not in some sense) is nothing, in spite of the materialists who tell us that "matter" contains the promise and potency of all "life," and that when you have traced a thing back to its source you know all about it. Why, nothing more surely prevents our knowing anything about it. A man is in raptures at some glorious beauty. He analyzes it, and it is gone. He traces it to what he calls its source, but the beauty is gone in the process. He has become so far a dead man —has lost so much "life," or "reality," and got but nothingness in its place. One of the highest known manifestations of "life" or "reality," is Handel's "Halleluja Chorus." Analysis comes, and forthwith nothing is left but vibration of air, and of catgut acting through the senses on the *medullum oblongatum*. I repeat again and again, that it is the analysis, or tracing back, that is nothing, wanted as it may be in its little way. A *mere* analyzer is a minute fraction of a man put into horrible and unnatural activity by being divorced from the rest of him. He is like Mr. Braid's hypnotized people. Dr. Carpenter tells us he has seen one of them turned for a time into a monster of scenting faculty. When a ring from a person was given him, he could discover the owner of it in an assembly of people solely by the resemblance between the smell of that owner and the smell of the ring. All this man's faculties were dead except the sense of smell,

so of course he could not look upon anything in its true light. In the same way, all a mere analyzer's faculties are dead, except that of analysis (or he would not be a *mere* analyzer), so of course he cannot look on anything in its true light.

By the way, I often wonder what is to become of our churches under the new dispensation of our analyzers or destroyers of religion, of our utilitarians, materialists, and disciples of Lucretius, supposing, that is, they get their way. Country churches are usually smallish buildings, and could without much expense be turned into cow-houses and pig-styes. But how about our cathedrals and large town churches? They stand where cow-houses and pig-styes are not wanted. Of course they might be pulled down and the materials sold. But would the materials pay for the labour of pulling down? Then leave them standing where they are. Yes; but then they would be taking up room that might be useful for haberdashers' shops. The question seems full of difficulty. What to do with the clergy would be a minor one. Still it would be a difficulty. Their income, no doubt, might go to the endowment of research, and all things connected therewith, such as farms, to breed dogs and cats for vivisection; for, as science advances, enormous quantities of them will be wanted; but the men themselves would become useless. Still, places of some kind might, I should think, be found for them. Archbishops would surely make good butlers, for they are accustomed to authority and places of dignity. So also in a less degree would bishops, deans, canons, and even archdeacons. As for the rest, they can all read, some of them can write a good hand, and clerks are wanted everywhere.

It is idle of the materialist to say, as a few of them do, that, whatever their theories may be, they do not wish

practically for any changes of this kind. Human life is a reality, and truth that is not to be followed out in practice is not truth. It is only notion-mongering.

If a notion-monger tells me that bread and meat are only gases and earths unfit for food, and yet that in practice I must not act upon the fact, but must eat as I always have done, I conclude that the latter is the truth whilst the former is a lie.

If a notion-monger tells me that religious ideas and ideas of right, wrong, and duty are nothing, being only developments of the superstitions of savages who fear evil spirits, and yet that in practice I must do my duty and worship God, and bring up my children to do their duty and worship God, just the same as ever—I conclude that these last are the truth and the first is a lie.

Materialism, or the destruction of that part of human nature which has to do by faith with the "things that are not seen," though offensively prominent just at the present day, has always existed in exceptional men, and even to some extent in whole races of men. Confucius, five hundred years before Christ, when asked about the existence of a Divine Spirit, answered, like his disciple in modern times, M. Comte, that such things might be, but as they are incapable of proof men ought not to think about them, but should give their sole attention to proved things. And, undoubtedly, the Chinese have to a great degree acted on this principle, and consequently are the best agriculturists in the world. As they never look for anything above food for the body they never get it, but the food they get in abundance. The symbol in Chinese writing to represent happiness is an open mouth taking in a huge chopstickful of rice.

Perhaps some people may look upon the Chinese as the highest type of man. To them, of course, materialism

in all its forms will be the highest thing, and Christianity, or anti-materialism, the lowest.

A page back I said that the religious part of human nature shows itself in savages in the form of fear of evil spirits. Lieutenant Masters, writing about the Tierra del Fuegans, informs us that these savages believe in devils, holding them to be the departed spirits of their "medicine men," and that the main object of their religious ceremonies is to keep these devils at a distance from them.

More confusion.

The Comtist, as we know, tells us to worship "*l'humanité*" or "mankind." He also tells us that to believe in cause or in God is folly, or the part of a fool. But mankind believes in cause and in God. Therefore mankind must be a fool. But, says the Comtist, we are to worship mankind. Then we are to worship a fool. Though I call this confusion, it may not be so after all. Perhaps the positivist thinks a fool a fit object of worship. But it is hard to say what he thinks. There are so many varieties of Comtists, as of every other sect. Indeed, many a distinguished materialist will have nothing to say to M. Comte. I can find, says Mr. Huxley, little or nothing of any scientific value in the dreary and verbose pages of M. Comte. But here Mr. Huxley goes too far. M. Comte was a very active-minded and original thinker, and many of his isolated sayings are true and wise, though no doubt it is uphill work finding them in "the dreary and verbose pages."

The confusion of mind amongst our physical-scientists is so endless a subject that I hardly know where to stop. But I will pass on to something else after making one or two observations about Mr. Huxley.

Mr. Huxley is a distinguished anatomist, an eloquent lecturer, and a charming popularizer of physiological

science, but I cannot help thinking that one or two of the convolutions of his brain must be a little too convoluted. At any rate, this might account for some confusions in his teachings.

Mr. Huxley, as we all know, has passed his life going about from platform to platform telling us there is one god, that matter is his name, and that all life in all its varieties is solely due to arrangements of the molecules of this ordinary matter. So far he is perfectly clear in unmitigated materialism, but every now and then he amazes us by turning round, looking us in the face, and saying, "What is that you say? Do you call me a materialist? I am nothing of the kind. Materialism has not a leg to stand on."

There is a common scene in public-houses with which many people must be familiar. A beer-drinking "navvy" is singing, swearing, and carousing. At length he pulls up for a moment, turns round, and stares sternly at his right-hand neighbour, who is smoking in boozy silence, and says, "What d'you mean by shaing I'm drunk? I'm shob' ash' fish." Then he roars and shouts and sings for another half-hour, when he again pulls up, again turns round and stares sternly for half a minute at his left-hand neighbour, who has long been hopelessly inarticulate, and at last hiccups out, "What d'you mean by shaing I'm drunk, I'm shob' ash' judge."

Similes are invaluable, and even necessary, but they seldom go on all fours. Sometimes even a simile with only one sound leg will be useful.

The statement that all varieties of life are due solely to the arrangements of the molecules of ordinary matter is, I need hardly say, the merest guesswork. Still guesses are allowable so long as the public are told that they are *only* guesses. Probably most of the guesses

and so-called necessary inferences of our scientists, provisionally useful as they may be, would appear to superior beings, who really know things, like the conclusions children come to, or like the old guesses that the sun goes round the earth, that living things could not live at the bottom of deep seas, that a steamboat could not carry coals enough to cross the Atlantic, and others without end and number, each one of them being a guess that was considered a certain and necessary inference by the men of science in fashion at the time.

But though I have not a word to say against anyone for guessing if he likes guessing, I must express my surprise at so clear-headed a person as Mr. Huxley often seems to be, guessing in so contradictory and confused a manner as he does about materialism. "Mr. Huxley," says Dr. Stirling, "makes only a convenience of his idealism. His actual world is materialism."

Now for a word or two about Mr. Huxley's pet word protoplasm, and his curiously convoluted ideas about it. The word itself was imported from Germany. Haeckel says that in the beginning there was cosmic gas, which, in the course of millions of ages, got condensed into liquid. In a few millions of ages more, land appeared, which gradually prepared itself for the appearance of "life"; and this life was first to be recognized under the form of sea-slime, mucus, or protoplasm. Thus protoplasm means (at least meant when it first landed from Germany) living sea-slime. Now, this is a charming romance, worthy of the German brain, lager-beer, and fumes of tobacco smoke, from which it doubtless emanated, but it is nothing else but romance. There is, as I need hardly say, no such a thing as living sea-slime. The word slime does not mean something living. But let us see what Mr. Huxley tells about protoplasm, for although not his

own child, it is his by adoption. This is one of the things he says. After describing the composition of a plant and its delicate outer case of wood, he goes on to show how there is, closely applied to the inner surface of this case, a kind of "semi-fluid matter full of innumerable granules of extreme minuteness." "This," he says, "is protoplasm." Now, I think few will deny that this is an excellent description of sap. But why change the name? "Sap" is shortest, and these changes are inconvenient. I tell my woodmen to cut down oaks in spring when the sap rises. I suppose in future it will be more correct to tell them to do it when the protoplasm rises. Of course they will learn what this means in time, but what scratching of heads and gaping of mouths there will be at first; for the agricultural mind, though very good, is undoubtedly rather slow. I can fancy them all consulting together, and saying, "Here's t' goovenor tells I to cut doon t' awks when t' prawterplasm rises; why, he's like to be fond." However, they must do as they are told, so perhaps they will think protoplasm means a hurricane, and set to work when the next high wind blows.

Protoplasm, we are told in another place, is the simplest arrangement of carbonic acid, water, and ammonia; man being just the same, only arranged a little less simply—a mere mechanical difference, inasmuch as we are told by physiologists as a fact that there is no distinction between vital, chemical, and mechanical phenomena; this "fact" being really only a guess. So far, this statement about protoplasm and its composition is clear. But now Mr. Huxley turns round and says, "We know *nothing* about the composition of any substance, living or dead, as it is."

The materialists become (naturally enough) so confused when they try to explain inexplicable things, that

we have only to turn over a page of their own writings to find a direct contradiction of their own most dogmatic utterances; like Mr. H. Spencer, who, after putting before us volumes of what he would have us to believe to be exact knowledge, turns round and says, "The conception we form of matter is but the symbol of some form of power absolutely and for ever unknown to us;" which, no doubt, is true enough. "Of the inner essence," says Schopenhauer, "of any phenomenon we have not the slightest knowledge. In our cognitive experience we never touch the real. Things in themselves are not known on any terms of any intelligence. . . . Only in the inner experience, in the consciousness of internal states, do we come across something that is more than phenomenal."

Thus we see that the first-class scientists and philosophers in their lucid intervals cannot help acknowledging the essential incomprehensibility of everything. Our third-class scientists differ from them in having no lucid intervals. They are grown-up children for ever playing at understanding things they do not understand.

An American paper, after describing Mr. Huxley and his lectures at New York, records the following conversation between an enthusiastic admirer of the Professor and his friend.

Admirer's friend. And who the dickens is Huxley?

Admirer. What! never heard of Professor Huxley, the great scientist!

Friend. Never. What has he done?

Admirer. Why, man, Huxley made the great discovery about protoplasm.

Friend. About how much?

Admirer. About protoplasm.

Friend. And what in natur *is* protoplasm?

Admirer. Well, protoplasm is what we may call "the life principle."

Friend. Anything to do with life insurance?

Admirer. Nonsense. I mean the life principle in nature, the starting point of vital action.

Friend. Oh, he discovered that, did he, and what good will it do?

Admirer. Good! It is a noble contribution to science, and will make the name of Huxley immortal.

Friend. So Huxley knows all about the life principle, does he?

Admirer. Yes, all about it.

Friend. And the starting point of vital action?

Admirer. Exactly.

Friend. Well, see here now; can he take some of his protoplasm and make a man, or a horse, or an elephant with it?

Admirer. Oh no, of course he cannot do that.

Friend. Can he make anything at all of it—even a gnat or a fly?

Admirer. I guess not.

Friend. Well, then, he may go to thunder with his protoplasm. I don't believe it's worth ten cents a pound, anyhow. 'Pears to me, these scientific fellows put on a big lot of airs about very little.

A vulgar story about a vulgar Yankee. Well and good. Still, this vulgar Yankee, without scientific culture, shows how the hard-headed common sense of the general public refuses to have dust thrown into its eyes, and will often hit nails on the head better than many a man full of knowledge, who will hammer with the utmost ingenuity and perseverance all round the nail, but never once hit a blow right down on the top of it.

Mr. Huxley's definition of protoplasm is so undefined as

to be good for nothing. It ranges from "bread," "roast mutton," "boiled lobster," through all creation up to "brain which thinks," and in one place he calls it a complex combination, *the nature of which has never been determined with accuracy.* Again, he says, "All living matter is more or less albuminoid." "This," says Dr. Stirling, "is the single conclusion of Mr. Huxley's whole industry; but it is a conclusion that did not require the new word 'protoplasm.' "

"Professor Huxley," says Dr. Beale, "adds to the confusion by giving so wide a signification to protoplasm, that almost anything may be called by that name. In fact," says Dr. Beale, "the word becomes useless."

T. P. Kirkman, F.R.S., trying to account for the popularity such a meaningless word as protoplasm has attained, seems to think it has arisen from "the ring of it." "It is a scientific sounding word." There may be something in this. "I wish," he says in his admirable book "Philosophy without Assumptions," "I wish I had time to exhibit the comical chaos of definitions of the word 'Protoplasm!'"

Mr. Huxley calls protoplasm "the physical basis of life." "Dr. Stirling's refutation," says Sir John Herschel, "of Mr. Huxley's philosophy of the physical basis of life is complete and final."

Messrs. Tyndall and Huxley, though they are of course distinguished men of science, are primarily popularizers of science. The gift of eloquence and expression is a charming one, and thus eloquent popularizers will always attract attention. But, besides this, they are useful in stirring up interest in science. Many a man owes his first introduction to the serious study of history to the perusal of sensation historical novels. So it is also with science. Many a man owes his first intro-

duction to the serious study of science to the perusal of sensation scientific lectures. Still, sensation lectures can hardly be called real science. "There is," says "The World" newspaper, writing about Sir W. Thompson, "a tendency in the popular mind to consider the lecturers whose names are most before the public as the chief scientific workers. Yet these are but the preachers. The popular expositor may exercise dramatic or literary powers of no mean order, and yet lack the divining intellect of the discoverer. The lecturer's fame, though wide spread, is like the actor's, ephemeral. But the discoverer's fame, like the poet's, is perpetual. Now Sir W. Thompson has never starred it in America, and preached with the air of a sage to reverential Yankees, yet he is a power in science of the very first magnitude."





CHAPTER VI.

ABOUT PROFESSOR CLIFFORD, AND SOME CONFUSED IDEAS IN MATTERS OF RELIGION AND MORALITY.

I WILL now pass from confused ideas prevalent in matters scientific to sundry confused ideas about religion and morality that tumble about the minds of some of our materialists, and cause much amusement to clear-headed men.

Religion, say the leading materialists, is to be eliminated, *because* it cannot be proved by reason; but morality is to remain. But why is morality to remain? It can no more be proved to the man who has none than can religion. "Oh, but," says Professor Clifford, the eloquent writer against Christianity, "I know that I ought to be beneficent, because when I look into myself I feel that I ought. Something within me tells me so." Yes, but this is appealing to intuitive consciousness, which is just what, in the case of religion, he says we are not to appeal to. This surely must be confusion.

Morality varies as religion. And when I say morality I do not mean merely the absence of immorality, for many a dead-alive man is without immorality. So is a gate post.

Good-bye religion, good-bye morality, though not at once. Dechristianization is not the work of a day. Thus, whatever his theories may be, I doubt not that Professor Clifford is just what centuries of Christianity in the blood must have made him. I doubt not that "he suffereth long and is kind," that he "envieth not," that he "vaunteth not himself," that he "doth not behave himself unseemly," that he "seeketh not his own," that he "rejoiceth not in iniquity," that he "is not easily provoked," that he "visiteth the fatherless and widows in their affliction," that he "keepeth himself unspotted from the world," that he "is merciful," that he is "pure in heart," and that he is "a peacemaker." In fact he is almost sure to be a Christian to a considerable degree in spite of himself. It is true that he condemns the religious faiths, and calls them "blasphemous and sickly dreams of hysterical women and half-starved men," thus reviling the whole human race, from him who was so divine that all civilized men bow their heads when his name is mentioned, down to the lowest savages, for even the lowest have some religion. Still all this is very likely nothing but notions spun out of the brain, very little to do with the actual man himself. It is as impossible for a philosopher, analyze as he may, completely to eliminate from his blood all the religious constituents of it that have been forming ever since men have lived on the earth, as it would be for him to alter his features and put them back to those of his supposed anthropoid progenitor. No doubt a man might commence the re-paganization of his children; bring them up to revile Christianity; to look on Jesus Christ as a wicked man who went about doing evil, and his teachings about a heavenly Father as (to use Professor Clifford's words) but "blasphemous and sickly dreams";

for Christianity, of course, means that which Christ was, is, taught, and teaches. Still he must not expect them or even their children to be genuine pagans. Many more generations will be required before all the Christianity is eliminated from the blood, and even then a black sheep will be sure to crop up occasionally, upon the principle Mr. Darwin calls "reversion"—some woman, perhaps, who has lost her child, and who throws herself on her knees and prays for grace to enable her to bear her affliction with resignation; or perhaps some evil-entreated man who, in a momentary relapse to Christian compassion and principles of his progenitors, will pray to God to forgive the enemy who has so spitefully used him. Let the training be what it may, such backslidings as these are certain to occur for many generations. Still, a thing taking a long time is not by itself sufficient reason for neglecting it. Time and patience will do wonders, and it is possible that by perseveringly deadening the soul for a few thousand years, we might all become apes, with nothing to say for ourselves but "Ubbaboo." In the long run the spirit makes the body; as Charles Darwin hints at the end of his book on "Sexual Selection," and as Charles Kingsley unceasingly taught.

Morality and religion cannot be separated, unless by "morality" be meant mere absence of immorality, in which sense no man, as I say, is so moral as a gate post. "Religion or morals," says Mr. Gladstone, "is 75 per cent. of life." 75 per cent. means three-quarters. Hence, if Mr. Gladstone is right, the religionless man is only one quarter of a man.

Morality means doing one's duty, and this means at bottom having a passion for right conduct—what is called in the New Testament "hunger and thirst after

righteousness"—not for advantage, not for gain, but for the sake of goodness itself, which goodness all men (except a few of the criminal class, some very low savages, and a few philosophers) believe to be the special attribute of God, as shown by such phrases as "*le bon Dieu*." Thus morality and religion are Siamese Twins. Kill one, and the other soon dies, too.

People of the utilitarian persuasion and others have very often confused ideas about "duty." They seem to think it means knowledge of what is right, which knowledge produces the corresponding right actions. But this is nonsense, inasmuch as knowledge is not a motive power. Passion in some form or degree is the only motive power. Habit produces action, but some passion or desire has always first formed the habit. "Duty" means at bottom the passion for, or "hunger and thirst after, righteousness."

The common-place utilitarian, as I say, thinks that doing one's duty is produced solely by knowing what it is one's duty to do; but this only shows that he has no clearer notion of the meaning of the word "duty" than the old woman in the Lincolnshire village. The clergyman of the parish meeting her one day, took advantage of the opportunity to exhort her to beware of the devil, "who," he said, "will always put evil thoughts into people's heads whenever he has a chance." "Aw, yes, sir," said the old woman, "I'm sure he will, for it's his duty saw to do;" upon which the clergyman could only say, "Go home, you stupid old woman, what's the use of talking to you?" But, after all, was she so stupid as the utilitarian philosopher? I must say I think not, for at any rate she did not suppose that the devil acted without having anything to enable him to act.

Passion in some form or degree is, I repeat again and

again, the only motive power. The word passion is the generic term that includes every species of emotion, desire, and affection "of the heart," as the phrase is. I can fancy an objector, if he is a more than usually stupid person, denying this, and saying that avarice, for instance, is not a passion, but only a *desire* for money. But it *is* a passion. I have seen an old man making a bargain, when the hope of turning an honest penny made his eyes glitter, his lip quiver, and his heart beat. If that is not passion, what is? So with all the emotions.

Of course vast numbers of people do right without hungering at all after righteousness, or indeed caring a straw about it, only in such cases it is not acting from duty, and duty is the word I am talking about. A man may act right from a wish to be admired, that is to say, the passion of vanity; from a wish to be beneficent, that is to say, the passion of pity; from a wish to escape injury, that is to say, the passion of fear; but these things have nothing to do with duty.

Many of our modern philosophers make the same confused mistake as I attribute to Professor Clifford, of thinking that what they call their opinions mean themselves. Take, for instance, Mr. F. Harrison, the Comtist. He writes much against Christianity. But it is like a sheep holding forth against green grass. His blood is full of Christianity, and he cannot help himself. Re-evolution all at once is impossible. It is true that my terrier dog, "Tiny," one day, after contemplating the pigs asleep, thought how very superior their lives must be to hers, and so determined then and there to set up as one, and be a pig for the rest of her days; and with this view she laid herself down on the straw by their side. Just then I came into the yard. At once Tiny jumped up, ran round me, barking, and licking my hand, and

showing, as only dogs can, her devoted delight in me. Then she caught sight of a rat. Off she scampered, tried, with complete unsuccess, to catch it, and then returned, wagging her tail with the extreme of self-satisfaction at her feat. Mr. Huxley tells us that the horse was once a bear. Perhaps Tiny was once a pig. But she never will be one again, try as she may, though I cannot answer for her descendants if they assiduously live the lives of pigs for a few hundred thousand years.

To suppose anyone before the time of Christ writing as Mr. F. Harrison sometimes writes is absurd, though the Christianity, such as it is, no doubt goes lame enough. "There is," says Mr. Baldwin Brown, talking of the writings of Mr. Harrison and George Eliot, "there is everywhere a shadowy image of a Christian substance, but it reminds one of that formless form wherein 'what seemed a head the likeness of a kingly crown had on;'" "and this," he goes on to say, "is the characteristic of much of the best writing of our time. George Eliot's *Deronda* and Mordecai lack just that heart of faith which would put blood into their pallid lineaments and make them breathe and move amongst men."

Then there is M. Comte himself. Though he reviled Christianity, he could not help being saturated with it. He told Sir Erskine Perry that he read a chapter of "*The Imitation of Christ*" every day. All the forms of what he called the religious culture that he taught were taken wholly and bodily from Roman Catholicism, and his altruism is nothing but Christian charity, as described by St. Paul, caricatured, just as he caricatured the sign of the cross, which he changed to touching with his finger what he supposed to be some exalted phrenological developments on his own head.

St. Paul's description of the manifestations of charity

Herbert Spencer says, with truth, that M. Comte is quite wrong, and that not opinions but character rules—that is to say, passions and their children, faiths and hopes. The more and stronger a man's passions, the more and stronger are his beliefs, faiths, and convictions, and the more plentiful his actions. "The deepest truth," says H. Heine, "comes from the deepest passion."

On the other hand, Mr. G. H. Lewes, the Comtist, wrote two bulky volumes, "Problems of Life and Mind," to show, amongst other things, that beliefs are the children of exact knowledge, and ideas of the understanding. This statement was in the preface, so I bought the book, and read every word of it—1014 mortal pages. Although I found much that interested me, all that Mr. Lewes says about beliefs coming from reasonings, logical inferences, and exact knowledge, seemed to me nothing but confusion of mind. A horse believes in oats, but his creed comes from the passion of hunger. A tiger believes in the antelope from the same passion. The belief that beautiful music is beautiful comes from the soul for it; that money should be saved, from the passion for accumulation; that money should be spent, from the passion for display; that admiration is the thing to live for, from the passion of vanity; that the universe is good, from the joy that is within, and that it is evil, from the misery that is within; that the cravings of the soul have some reality for their justification, from the faith that is within; that nothing is to be believed, from the want of faith within; that fighting is good, from the pugnacity that is within; and that it is right to do one's duty, from the passion for, or hunger and thirst after, righteousness that is within; whilst the Godly man believes in God, from that passion within him, which makes his "soul long for God as the hart pants after the water springs." But in this last

kind of man the British third-class physical scientist disbelieves, for he cannot understand what the thing can mean.

"Lewes's 'Problems of Life and Mind,'" says James Hinton, "is a thoroughly negative book, wanting to shut us up in the senses and the immediate generalizations from them."

It is true that the creed that stones are hard is founded on the senses, actual knowledge and processes of the mere understanding; but this is only because the hardness of a stone belongs to the material, or what is called, the dead side of nature, and therefore, being within the province of the physical scientist, some tolerably exact knowledge, as it is called, relating to it is possible. But who knows anything about the really important matters, about life, living faiths, hopes, passions, and the spiritual natures of creatures? Here the only way to know is to experience. To know means to *be*. Knowledge of faiths and passion in another is not knowledge, but guesswork from appearances and vague analogies. The life that is in so insignificant a creature as an ant is a miracle, and for ever incomprehensible. An ant cannot hear or talk. Yet it communicates to its friend all it wants to communicate, which is sometimes a great deal. How does it do this? In an ant-hill there are, say a million ants. These ants all live together and never quarrel. Why do they never quarrel? But if one of them happens to meet a stranger from another ant-hill, it knows at once that the stranger is not one of its million friends. How does it know this? Indeed, it not only knows this, but the knowledge is reciprocal, and there is a fight on the spot. How is the knowledge reciprocal? and why do they fight? Again, take the common flea. Why does it jump? Is it fear? If so, is its fear the same as our fear? If the same,

why don't we jump like a flea? Or do they jump for joy? If so, what is a flea's joy? Is it like our joy? If it is joy that makes it jump, why should this joy set the springs of its legs going in such an absurd manner? And how is the joy of the flea's soul connected with the muscles of its legs? Human beings sometimes dance for joy, but they do it in a more continuous manner, not in ridiculous, intermittent paroxysms. Is then the flea's joy more intermittent than a man's joy? Some microscopic creatures, called volvoxes, who live in water, pass most of their time turning quickly round and round. Why do they do this? Dancing Dervishes do the same thing, because they are mad. Are volvoxes, then, mad?

Questions such as these are endless, and can never be answered—no, not even in two volumes containing 1014 pages. And if the man with nothing but understanding cannot understand even a flea's passions and emotions, how can he understand the highest developments of life, and the noble Christian faiths, hopes, and other passions of the Godly-minded man? Why, it is all Hebrew to him, and so, to get out of the difficulty, he either denies that there are such things, or says that such men are lunatics or "half-starved men who dream sickly dreams."

We can only appreciate what we have got in us to appreciate. "Moses and Joshua," said the little reformatory boy to the school teacher—a boy who had been brought up amongst prizefighters and general ruffians—"Moses and Joshua," he said, "was all very well, but nothing to Tom Sayers. What was such as they to that little chap a standin' up as game as a bantam cock before that great thunderin' Yankee Heenan a knockin' on 'im about like nine pins. Lor' bless yer, Abraham, Noah, and that lot wasn't fit to hold a candle to him. He war a hero, he war."

The Athenian tanner thought about leather till he could see nothing else in the world, and said, "There is nothing like leather for statues." And the physical-scientist passes his life trying to understand things with his mere understanding till everything else is dead within him, and he says, "There is nothing in the world but understood things, and understanding to understand them."

Nothing but understood things!! Why, even without going beyond the material, or what is called the dead side of nature, what can be understood? We can get a glimpse here and a glimpse there. But a glimpse is not true knowledge. To make it truth wants knowledge of the whole, of which it is but the glimpse of a part. "Our science," says Emerson, "works only on the outward rind of things." Mr. G. H. Lewes, on the contrary, says that we do know absolute truth, and that this truth is what each man sees and is conscious of. But I say that this truth, as he calls it, only means some extremely partial, defective, and therefore erroneous views of truth. A man on a calm moonlight night is on the sea-shore looking across the Atlantic. A narrow streak of bright silver under the moon reaches from his eye to the horizon. Mr. Lewes (as I understand him) says that this merely narrow streak is the truth. I say that the truth about the matter is that the whole expanse of ocean far beyond the power of vision is really one vast surface of shining brilliance, and that our spectator, who is only conscious of his narrow streak, and who believes that there is *only* a narrow streak of light, is totally wrong. Instead of his idea about the thing being true, it is false. So it is all through human life. Poor, short-seeing man lives his days catching a glimpse of joy here, of beauty there, and of what he calls knowledge in another place, and then he

thinks he knows all about it. But this view is totally false. In real truth the world is crowded with an infinitude of things waiting to be known *about*, though they cannot be known, with joys waiting for living creatures capable of enjoying them, and with beauty beyond the reach of the strongest imagination to imagine stretching out through infinite space, and filling every cranny of the universe. You say you cannot see any of this beauty or feel any of this joy? Well, perhaps not. Perhaps you are a dead man—"dead in trespasses and sins"—or in satiated sensuality, or in the decrepitude of old age, or in selfish indolence, or in what is called worldliness, or in habits of destructive analysis, or in unceasing occupation of the mere understanding, or in a life given wholly over to knowledge-hunting only for the sake of knowledge. "That man," says Goethe, "loses Paradise in striving after knowledge, is true of all time." In fact there are a thousand ways for a man to be dead whilst he lives.

Mr. G. H. Lewes, at page 361 of "Problems of Life and Mind," says, "A thing is what it appears." Now, what does he mean?

To go back to the narrow streak of light under the moon; the question we will suppose to be—"Is the whole ocean shining, or is it not shining?" A wise man, A, seeing how the matter really stands, says, "It appears to me that all the ocean as well as the streak under the moon must be really shining." A stupid man, B, understanding nothing about the matter, says, "It appears to me that no part of the ocean is shining except the narrow streak." But Mr. Lewes says that "a thing is what it appears." Then the whole ocean is at the same time both shining and not shining.

Instead of Mr. Lewes's maxim being true, reality or what *is*, must necessarily be different from what only

appears. "The things which are seen," says St. Paul, "are not made of the things that do appear."

"We have learned," says Mr. Lewes, again, at page 360, "*what* a thing is as soon as we have learned those aspects which it presents to sense or intuition." But whose sense and whose intuition? His evolutionary school says that there are all shades and degrees of living creatures graduated without break, from a jelly-fish to the highest conceivable man, the one being evolved out of the other. Then, whose sense and whose intuition does Mr. Lewes mean? Does he mean the jelly-fish's senses? But it has none. Perhaps he means the jelly-fish's intuition. But what is a jelly-fish's intuition? Or does he mean the senses of creatures higher than the jelly-fish? If so, of which? Of a crocodile, or of a cockatoo, or of an anthropoid ape, or of a "heathen Chinee," or of a mathematician, or of a metaphysician, or of a poet, or of a prophet, or of a pickpocket, or of a Mephistopheles, or of a saint? For the senses and intuitions of all these are totally different the one from the other.

To put the case in another way.

Truth, or what a thing *is*, means, says Mr. Lewes, the aspects it presents to intuition. But intuition tells the savage that the sun goes round the earth. Therefore that the sun goes round the earth is the truth. But again, intuition tells a Newton that the sun does not go round the earth. Therefore this also is the truth. Thus we see (1) that it is true that the sun goes round the earth; (2) that it is true that the sun does not go round the earth.

Mr. Lewes's confusions come partly from the Comtism that is in him, and partly from a fancy definition of his own of the term "reality," or what *is*, as opposed to

what only appears. Metaphysicians are always doing this. But the meaning of any word is the result of a gradual growth of thousands or millions of years, supposing the earth to have been inhabited so long. Then what is the good of any stray philosopher thinking he can undo all this by giving new and fancy meanings of his own to words? Of course if it gives him pleasure to say black really means white, let him do so. Indeed, in such a case, I am glad if he does, for I like to see people pleased. Still he must not expect mankind to adopt his new reading, especially as no two metaphysicians agree.

But Mr. Lewes's confusion also comes partly from the Comtism that is in him. The fact is he, Comte, Confucius, and their whole school, together with the Chinese race of men, have got "a bee in their bonnets," namely, hatred of faith in "the unseen." But it is vain striving against human nature as developed amongst the higher races of mankind. Consciousness of and faith in "the unseen," the unproved, and the not-understood, exercises an enormous influence on the souls of men. History shows that it always has done so; and we have no reason to expect the future to be different from the past in this respect. Instead of having a living faith in what is supramundane, positivists want men to be, with regard to all that is beyond and above the things of the senses and of the understanding, dead men. What we should become if they were to get their way it is impossible to say. Chinese pigs, perhaps.

Christ preached the gospel of faith, necessarily including hope, joy, and action, for these things go together. Professor Clifford preaches the gospel of doubt—that is, of inaction and death, for doubt and inaction are inseparable as the Siamese twins. Carry doubt a little farther than does the Professor, and we come to

the philosophy of Pyrrho, who taught that people should never act at all, because it was impossible to know what should or what should not be done. If when out walking a mad bull was coming towards him, he would stand still. How could he tell whether it was best to turn to the right or left? Thus he had always to be taken care of. In fact, he was a lunatic. Still his reasoning was always admirable. Doubt carried beyond a certain point means insanity, just as credulity carried beyond a certain point means insanity.

Professor Clifford, writing against religious faiths, confesses that they lead to most happiness; but that, he says, is nothing. The question is, Are they true? But truth to any living being means right relation between that being and its surroundings—the relation, that is, that leads to most happiness and wellbeing, and therefore to survival. Now, in men religious faiths of some kind lead to most life and wellbeing, and therefore to greatest fitness to survive. Doubt is a negative thing that checks the circulation of the blood, and ends in inaction and death, or death in life—that is to say, it prevents survival. Thus evolutionists will see how it is that the enormous majority of mankind have religious faiths and passions of some kind, whilst the doubting, reasoning, passionless, analyzing, destructive philosophers form so insignificant a minority that their existence is hardly worth taking into account.

Whilst Professor Clifford, if I understand him right, condemns all religious faiths, other materialists propound other views more or less fantastic. Dr. Tyndall even says that men ought to be religious, but that their religion should be of the silent sort. But this must surely be confusion of mind. All human passions demand expression, and without the expression there would soon be

no passions to express, even if there were any to begin with. I wonder whether the Professor was ever in love, and if he was, whether his worship was of the silent sort. If so, I fear he is a bachelor.

Then there is Mr. Matthew Arnold. After condemning all passion or Hebraism (as he calls it) in opposition to Hellenism (phrases he gets from H. Heine)—I say after condemning all passion, he says that nevertheless it is not inconsistent with true culture for our “sweetness and light” to be *touched with* emotion—something, I suppose, like a salad with a *soupçon* of mustard in it. Mr. Arnold is, I know, married. I wonder whether his wife is satisfied with this *soupçon*.

As all life and action must come from passion, emotion, desire, or whatever one chooses to call it, I am afraid, a mere *soupçon* of passion will produce but a mere *soupçon* of life or action.

Action, I repeat, comes from passion alone. The world contains much misery, wickedness, and folly, upon which the misanthrope looks with hatred, a Montaigne with good-natured contempt, the philosopher and man of science with curiosity, and the Christian with pity, whilst the mere poet, seeing no beauty there, passes by on the other side. The hatred is negative, and produces no action towards mitigating the evil ; the contempt is negative, and produces none ; the curiosity is negative, and produces none ; but pity is a positive Christian passion, and produces action in proportion to its degree.

Mr. Arnold owes much to H. Heine, but he might with advantage owe more. Heine taught that a noble or divine life meant not “light” or “reason” but “permanent passion without unrest.” How can reason, the checker or modifier of life, mean life ? One might as

well say that water means whisky. Water is not whisky. It only makes whisky more wholesome by taking some of the fieriness *away* from it.

Mr. M. Arnold, like Professor Clifford, also holds forth against faith, and says that religion must be built upon certainties and realities about which there is no puzzle. But this must be confusion. Why is religion to be different in this respect from everything else? Astronomy, mechanics, chemistry, medicine, music, poetry, morals—every human pursuit is built upon ideas about which there is infinite and eternally inextricable puzzle; for go deep enough, and puzzle is the one law. Why is religion to be the one exception? No doubt it is true that many shallow people are like children, who can see no puzzle anywhere, but this only comes from the shallowness. Mr. Arnold was once a charming poet, but I fear there is a sadly confused corner in his head somewhere.

Another of our materialistic teachers is Mr. Leslie Stephen. He also tells us, like Confucius and his disciples, Comte and his positivists, to live on realities or things proved to the understanding, not on faiths. Well, all I can say is that if we followed his advice, there would soon be no human race to live on realities or on anything else, if for no other reason than that the lover would no longer love. The lover's love depends upon faith in many things that cannot possibly be proved to his understanding, even supposing he has any. Men live not by what Mr. Stephen calls realities, but by real living realities, namely, faiths, hopes, loves, passions, and enthusiasms. Take these things away, and mankind would at once die out—die out, I say, not merely become pigs. A pig has a firm and enduring faith in barley meal, though what barley meal is, cannot possibly be proved to its understanding. Perhaps a materialist will say here that the

meaning I give to the word "realities" is a fancy one of my own, and that his is the true meaning. But if he does say this, he will be wrong. Reality means specially the spiritual, not the material side of things. Nobody says, "My body turned me round;" but everybody says, "I turned my body round." This shows that according to the language of mankind the agent, or the real reality is the soul or what is called the spiritual part.

"What we want," says Ruskin, "is more passion, not less. The ennobling difference between one man and another is precisely this—that one man feels more than another. . . . We are only human so far as we feel, and our honour is in proportion to our passion."

Mr. G. H. Lewes, as we have seen, pulls in the same boat with Messrs. Comte, Clifford, Confucius, &c. All such people would banish from human life all relation between the minds of men and "the things which are not seen"—the things men cannot help believing to be above themselves. Such ideas and faiths Mr. Lewes dubs "metempirical," and consideration of them he considers superstition.

Men look out upon the heavens and see infinities of worlds, compared with which our earth is a mole-hill. Are there no minds in any of these worlds transcending ours? Common sense says there are, and that there exist in more favoured regions than ours beauty, goodness, and powers ineffable and inconceivable. And yet we are to believe in nothing beyond our little experiences in our little world, and all reverence for what is ideally superior to ourselves is "metempirical" superstition! Now I say, on the contrary, and mankind says too, that reverence for ideally transcendent excellence, beauty, goodness, and greatness, is about the highest attribute of human nature.

Perhaps the best view to take of the starry heavens is

to look upon their material infinities as symbols of the spiritual infinities there must be to match.

After all, I dare say that Mr. Lewes is really like the rest of the world, and reverences excellence beyond his own just like everyone else, "metempirical" or not as the thing may be. And his opinions to the contrary come, I strongly suspect, merely from that confusion of mind that must arise when people try to wrap up the infinities and indefinites of reality in their little parcels which they label "methods" and "systems of philosophy."

A man who reviles all faith in and consciousness of the unseen, the unknown, and unprovable, and of all that is higher than himself, reviles that without which man would be but a poor creature. Little enough of a saint as was the first Napoleon, even he never lost an opportunity of expressing his scorn of the materialists. "Il n'y a que les sots," he says, "qui défient l'inconnu."

The thorough-going materialist, who is a mere negation of positive qualities—who "stets verneint," as Goethe says of Mephistopheles, is sometimes called by the French, "un esprit fort"—in irony, one would think, for in truth he is "un esprit très-faible." He is a soul whose special characteristic is absence of life or passion.

Nature's doings are sometimes full of fun, and it is very comic to see how men will suppose their beliefs or want of beliefs to come from what they think their profound reasoning powers, whilst in truth they come from their passions, habits, and desires, or from the absence of these things, whilst their reason is only used to demonstrate to themselves and others the beliefs or want of beliefs that are already there. Whilst they think they are discussing some abstract question of science, religion, or morals, they really are only putting into expression their own natural characteristics, so that the real question becomes not

whether their solution is the truest one, but whether they are the highest kind of men, that is to say, the men most developed in the highest direction. The objection to asking such questions is, that although they may be the only true questions to ask, the answers do not come to much. A says he is the best, B says he is. And it is no use getting C to be umpire between them, for he only says they are both wrong, and that he is the best. In fact no two types agree. Whilst the commonplace utilitarian philosopher thinks virtue means absence of passion, a Ruskin says the highest virtue means the highest passions; the Hebrew poet, H. Heine, says that the divine life means "unceasing passion without unrest," and the good-humoured cynical man of the world who crops up in large towns denies that the word virtue has any meaning at all.

Mr. Lewes tells us, as we have seen, that all ideas that cannot be traced back to experience, being merely "metempirical," are to be banished !! But traced back by whom—by a saint, or a poet, or a scoundrel, or an anthropoid ape? No two men are alike. Take for example the idea that "gratitude is right." Now the saint and poet can, and the scoundrel and the anthropoid ape can *not* trace it back to their experiences. Then what are we to do with the idea? are we to banish it or not to banish it? Or shall we call in the philosophers to decide? But I have read volumes and volumes of their writings, and no two agree. One says, there *is* such a thing as natural gratitude, another that there is not, and another that it is only transmuted selfishness, whilst the French philosopher, of a still more negative turn of mind, said that gratitude only means the expectation of further favours.

The *mere* philosophizings and analyzing of the *mere*

philosophers, whatever their negative and destructive influence, have no positive influence. They may kill a man's soul or body, and in fact have often killed both, for if the former is killed the latter has not long to live ; but they cannot impart life.

I have referred above to the anthropoid ape because my remarks are addressed especially to the physical-scientist of the period, and I wish to adapt my phraseology to his system of ideas in order to make myself understood by him.

Mr. H. Spencer's materialism takes another form. So many teachers, so many teachings. Mr. Spencer re-erects the altar to the Unknown God which Christianity pulled down. We are to bow down before something, because we know nothing about it. Well, at any rate this is better than not bowing down at all, as most of our materialists teach.

Philosophers are the same in all ages. "God," says Macaulay in his essay on Milton, "God, the uncreated, the incomprehensible, the invisible" (that is, the Unknown God), "attracted few worshippers. A philosopher might admire such a conception, but the crowd turned away in disgust from words which presented no image to their minds. It was before Deity embodied in a human form, walking among men, partaking of their infirmities, leaning on their bosoms, weeping over their graves, bleeding on the Cross, that the prejudices of the Synagogue, and the doubts of the Academy, and the pride of the Portico, and the fasces of the Lictor, and the swords of thirty legions were humbled in the dust."

Many a would-be pagan of the present period says that Christianity is nothing because maxims as moral as anything in Christianity were enunciated by heathen moralists, poets, and philosophers, such as Seneca or

Juvenal, the latter of whom said that people should be virtuous for the sake of virtue. But the question is what a teacher himself *is*, not what maxims he spins out of his brain. Maundering maxims of mooning moral philosophers are exactly nothing, and have *no* influence. The living soul with the passions human and divine that produce, and can alone produce, the actions and lives that the heathen moralists recommend with their still-born maxims, is everything, and can and does every day work miracles, for the influence of character upon character is mysterious and miraculous. "The Imitation of Christ" is a book which has been studied by millions, and had enormous influence. I have never heard of any book called "The Imitation of Seneca." Indeed, if there is such a book I am afraid that inasmuch as Seneca was a usurious rogue, it would only teach people how to cheat their neighbours, or, at most, how to lend out their money at the highest interest. Moral maxims indeed! I once knew a horse-dealer who prefaced every lie he told by saying, "My maxim is 'Honesty at all costs.'"

Materialists deny the possibility of miracles. But this again is nine-tenths confusion of mind. They deny that anything supernatural or above the ordinary doings of men can happen. But if a man is born above the ordinary run of men, what he does *must* be above the ordinary run, or he would not be above the ordinary run of men. Supernatural does not mean *contrary* to nature, it means *above* ordinary nature. To do a thing *contrary to* nature must be horrible, wicked, and monstrous. Jedediah Buxton in the matter of calculating was a miraculous supernatural person above ordinary nature. Therefore he performed miracles, and when asked to multiply in his head 3572 by 4829, he gave the answer

in a second or two, but this, though supernatural and miraculous, was not contrary to nature, for his answer was always the right one. If a supernatural being comes into the world he *must* do supernatural things, but not things contrary to nature, for then instead of being above ordinary nature he would be a horrible monster contrary to nature. Now if a man with merely a supernatural power of calculation can do miraculous or supernatural things, what may not a man do who comes into the world with passions or "character" supernatural in degree or in kind? One faculty may be supernatural just as well as another; or all faculties together may be supernatural. We know of no limit to the possibilities of life.

But the British physical-scientist of the ordinary type cannot understand this. Whatever his cleverness may be, he is what the Germans call a "Philistine." Mere understanding cannot believe in anything higher than itself or higher than what is ordinary. Genius can with its imagination, and of course the higher qualities themselves can believe in themselves, but mere understanding is helpless.

A word or two more about Professor Clifford.

The extreme of the materialistic school is represented in "The New Republic" by Mr. Saunders, the hater of everything that is generally considered good. Now, Professor Clifford seems to me to hate most things that are commonly considered good by Christian men, but, as I have said, it is very likely only his reasoning not himself, that does it. A man cannot alter the constituents of his blood and dechristianize himself all at once. Still, the way he has of insulting all that the respectable part of the community hold most dear and reverence as most sacred cannot be defended, however charitable one may be, if only on the score of ordinary civilized be-

haviour. "We believe," says a writer in the "Quarterly Review," "that Professor Clifford is a young man, and we trust that when he grows older he will learn the manners of good society."

Professor Clifford tells us that right conduct is exactly opposite to the text, "Blessed are they who have not seen and yet have believed." In other words, that acting from faith leads to unblessedness or misery. Well, this is pessimism with a vengeance, whatever else it may be. It is saying that the whole sentient universe is miserable; for undoubtedly every living thing from a saint to a jelly-fish habitually acts from unquestioning and unconscious faith in the truth of its own nature. A sheep does not wait for proof before it eats its grass. Things are universally believed true till proved false, not believed false till proved true; and justly so, for the human race has been learning practically for thousands and thousands of years whether they are true or not upon the "proof of the pudding" principle. Theorizing is all very well, but the real test of truth is how a thing works in practical life. Some theorizing philosophers say that marriage as an institution is contrary to reason. But the real test of truth about the matter is the question, "Does mankind marry, or does mankind not marry?" But this is not enough for our Professor. To him truth must be proved before he can believe it. But proved by whom? And what does he mean by truth? The deepest truth, says H. Heine, can only come from the deepest passion. Does, then, Professor Clifford mean by truth that which comes from the deepest passion, or from the shallowest, or from the highest, or from the lowest, or from no passion at all? I suppose not from the deepest, for the Professor condemns the words reported to have been uttered by Jesus Christ, and it is generally agreed

amongst civilized men that Christ was inspired by deeper and higher passions than other men, and therefore uttered words of deeper truth. The words of Jesus Christ, said even J. S. Mill, must have been uttered by Him, for nobody else that ever lived could have uttered them.

I wonder how Professor Clifford dates his letters. Perhaps the most practical and universal form into which the worship of the Founder of Christianity is put, is reckoning time from the year of His birth. But the learned Professor holds Christianity to be "sickly dreams of hysterical women and half-starved men;" and as he is, I doubt not, a perfectly honest, excellent, conscientious, and consistent man, to suppose that he would perform an act of worship to the founder of such a thing is absurd. I know he offers the world a substitute for Christianity, namely, "cosmic emotion," or worship of aggregations of atoms. But we cannot possibly reckon time by them if for no other reason than that nobody knows when they began to aggregate. One man of science says a certain number of million years ago; another says a few hundred thousand million more; and another says never. I can only suppose, then, that Professor Clifford does not date his letters at all. However, he can always give the day of the week and the day of the month.

After all, the philosopher at his desk and the physical-scientist with his microscopes, when they condemn everything but analysis and physical research, are only telling us all that "there is nothing like leather." The professor of physical science preaches "cosmic emotion," which means, according to the interpretation of Mr. Goldwin Smith, "the transfer of our affections from an all-loving Father to an adamantine universe formed of aggregations of atoms." This is his "leather." The historical positivist whose thoughts have dwelt much on men of

the past, says we must worship them, and only them. Comte himself did not take any interest in the stars, so he preached that men were not to study astronomy. A clever man like F. Harrison values and expects posthumous renown, so he preaches posthumous reputation for everyone, as the sole motive for action and object of hope. The cultured and artistic Renan preaches art and culture for the few, and indifference about everything and everybody else. Hegel, the reasoner, taught that God means thought. And the Christian man preaches faith, hope, joy, Godliness, righteousness, love to God, love to man, delight in the joyous, and pity for the sorrowful. In fact each man cries out from the top of his own minaret, "There is nothing like leather." And this is as it must be. No man can fly above himself. He who is Godly must preach Godliness. He who is Godless must preach Godlessness, though the Godless may become Godly, and then, of course, he will change his cry.

How can the impassioned Christian man full of warm sympathies; Professor Scalpel, the illustrious anatominist, physiologist, and vivisector; Herr Dingansich, the abstracted metaphysician; and Mr. William Sykes, burglar and general scoundrel, look upon any one question in the same light? Then, if not, how can any one of them prove to any one of the others what he calls "truth"? Thus the question to ask becomes, as I have said, not so much What is truth? as, What is the highest kind of man?

Clear expression of ideas by language can only exist by the use of faulty and imperfect classification, for language itself means classifications, and classifications are but contrivances used for convenience with more or less, but rarely or never perfect truth. Thus I must not be supposed to mean that the physiologist is never a

Christian man, for I mean nothing of the kind. James Hinton was an eminent physiologist, a surgeon, and a man of science, who accepted with his intellect most of the scientific conclusions of the day, such as those about evolution. But besides this he was a Christian in the best sense of the word. "Whilst," he said, "the conclusions of the intellect can be nothing but phenomenally, doubtfully, and imperfectly true, I *know* that when I am most a Christian, I am the best man." This was to him certain knowledge, though of course it was unprovable to another person who might choose to deny it. "I cannot prove," says Ruskin, "the truth of Christianity, but of this I am quite certain, that it turns out better men and women than anything else." Nothing like the proof of the pudding.

A word about Professor Clifford's "cosmic emotion," or adoration of aggregated atoms of matter. We are bound to suppose that he himself experiences this passion. But who else can? A noble action will excite emotion in men, but not a big stone; no, nor twenty big stones. Indeed, the size or number of pieces of aggregated atoms of matter makes no difference. A philosopher may gape with wonder if they are very big and he may feel *curiosity* to know what they are made of; but that is all. Passion or emotion means life acted on by life, not by aggregated atoms. Thus the talk about cosmic emotion is mere confusion.

I said, a page or two back, that there is no known limit to the possibilities of life. Strictly speaking, all life is miraculous; but still there are degrees; and who can tell what miracles might not be performed if people would only concentrate their energies instead of nullifying them by the self-seeking?—that is by what Goethe called, "the negations of life," and James Hinton called "the deadness in men." "If men," said Wordsworth, "would devote their

whole selves to their single object as a bee does to its flower, there is nothing they would not accomplish as easily as walking." "If thine eye is single thy whole body will be full of light." But whose eye is single? Instead of complete devotion of himself to his one flower, like the bee, one of us is thinking all the time whether the excellence of his honey will hand his name down to posterity; another what the present Mrs. Grundy will say of him; and another how much money his honey will bring. Each and all of us have some self-seeking. And in fact human life is so conditioned that this must be so more or less. The absolutely single eye is for men, as they run, impossible. James Hinton's passion was a single-eyed passion for wisdom and goodness of the highest kind. But he had a wife and family to feed. So money must be earned, and earn it he did, for he was the first aurist of his time. To be sure all this money-seeking went so much against the grain, that he now and then found it impossible to distract his mind from its habitual contemplation of the mysteries of the universe to the business of the moment, and one day instead of writing on his patient's prescription that the ointment was every evening to be well rubbed in all round the ear, he wrote that it was "every evening to be well rubbed in all round the world." Still, notwithstanding occasional lapses of this kind, he became a distinguished surgeon.

Again I repeat that it is wiser to ask what kind of man is the highest, than what is truth. There is no limit to truth. The higher the man the deeper the truth.

It may be a curious question to ask what connection there may be between excellence of senses and excellence of religious faculties. The Jews have as a rule more developed senses than the Europeans, and many Jews like Spinoza and some of the old Hebrew prophets, have been

called God-intoxicated men. On the other hand, Miss Martineau, who lived without God in the world, and gloried in doing so, was in a very great degree without senses. No smell, no taste, and hearing so defective, that she could converse only with the aid of ear-trumpets. We read that at dinner if she wanted to know what somebody at the other end of the table had just said, she laid down what must have looked like a telegraph wire, yards in length, winding in and out amongst the dishes and plates. At last the observation reached her that the soup was hot or the mutton underdone, as the case may have been. These imperfections in her senses were sad misfortunes, and if I am right in my supposition that they in some degree led to yet greater imperfections, it was more sad still.

To take an extreme case. There have been instances of men without any senses at all except one of touch. They would scratch themselves at any skin irritation, but with this exception seemed to have no means of communication with the outer world. Now, inasmuch as such unfortunate people must be dead to all the glorious beauty of the works of God, we cannot wonder should they be dead to God himself; for mere irritability of the skin, if the *only* channel for these beauties and joys to flow through, would be rather a contracted one, true as it is that scratching under certain circumstances undoubtedly has its pleasures.

A man who shuts himself up like a German philosopher, ruminating, analyzing, and smoking, and only ruminating, analyzing, and smoking, puts himself into much the same position as the man without senses. Still, many things lead to atheism. One is pessimism. Unhappiness prevents a man from seeing happiness where it exists. So he says, there is nothing but misery

in the world—there is no good God, or, indeed, any God at all. This form of atheism the clever Frenchman laughed at by the saying, "I have toothache, therefore there is no God." "If," says this school, "I had been the creator, all things would have been perfectly good, and all people perfectly good and perfectly happy. But they are not so. Ergo, there is no God." "This," says Professor Blackie, "is like a man saying, I can imagine a better machine than the steam engine. Ergo, there was no James Watt."

Another way atheism sometimes comes, is by a man being born without the passion of reverence for what is above himself. These are monsters, like a calf with six legs.

I have mentioned several fantastic forms materialism takes, but not that one of M. Comte, for we all know that his religion is to worship "*l'humanité*," that is to say, the whole of mankind, necessarily including Judas Iscariot, Cæsar Borgia, Lucretia, Fieschi, and all thieves, thugs, murderers, prisoners, forgers, drunkards, criminals, haberdashers, tinkers, tailors, lunatics, idiots, and anthropoid apes of all ages and all time. Well, it is partly a matter of taste. If they like to worship these people, I see no reason why they should not do so. Still, if the positivists spread out their adoration over so large a field, is there not some risk, as men are made, of the passion becoming a little diluted? Passions usually vary inversely as they are spread out. Passionate, self-forgetting devotion to one person is sometimes so intense as to cause insanity; to one's own family it is also often very intense, and to one's country it is sometimes strong. But spread out in a cosmopolitan manner all over all humanity all over the world in all time, it would surely tend to become rather too like water-gruel made with not over much oat-

meal. It is true that some people have the power of heating their imaginations over an idea; but then it would not be passionate devotion to an unimaginable number of human beings, but only to an idea in the enthusiastic Comtist's own head. Natural passion, and a heated imagination over an idea, are two different things. Where the former will be self-forgetting, the latter is generally connected with a craving for the glorification of self and hobby.





CHAPTER VII.

SOMETHING MORE ABOUT CONFUSION OF MIND.

I HOPED I had finished with the confusions of our confused men of science, but I find this is not the case, for I do not think I should be justified in omitting from my catalogue the following instance from the medical profession :—

A few years ago an absurd proposal was made by an eminent surgeon to test the efficacy of prayer to cure disease, by setting apart two wards in a hospital ; the patients in one ward to be prayed for, but not those in the other. I need not say that his object was to show that praying is nonsense.

The influence an exalted character sometimes exercises over the minds of men is not disputed except by people with very stunted souls. “It is given us,” says George Eliot, “sometimes even in our every-day life to witness the saving influence of a noble nature.” Jesus Christ said of a particular instance of disease, that such cases could not be cured except by prayer and fasting. Orientals never speak in the abstract European way, so this saying was a concrete or Oriental manner of expressing the fact that it is only by habits of prayer, self-

control, and a life inspired by the noblest Christian passions that a type of character can be formed so exalted that it will be able to impart into the soul of a suffering fellow-creature so much faith, hope, and new spiritual life that his bodily infirmities vanish either wholly or for a time. Now the notion of a British hospital surgeon of the ordinary type, with his attendant Bob Sawyers, exercising this influence, was to me ludicrous beyond the power of words to express, or at any rate beyond my power. The simple-minded ignorance of and disbelief in everything above the ordinary level of soul displayed by the proposal, amused me beyond all measure ; especially as I doubted not that the proposer was a man of pre-eminent professional attainments.

"An unselfish life," says Dr. G. Wilkinson, talking about the above saying of Christ's—"an unselfish life (much more difficult to obtain than any medical qualification) is here postulated as the prayer treatment of disease." Again, he says, in his quaint phraseology, "The prayer that moves mountains is not ejaculation, with no antecedent life, but exalted life from foregone divine inward engineering."

About curing bodily disease by spiritual appliances there is a curious story in Charles Kingsley's life. A man in his parish went mad, tore off his clothes, and went about naked in the wood near the village. Afterwards his madness took a melancholy turn, and he declared that the devil had got hold of him and would not let him sleep. "The surgeon," says Kingsley, "luckily believing in demoniacal possession, came to me and said, 'As I cannot cure this man's mind by making his liver act, you must make his liver act by curing his mind.' So I went to the patient and agreed with him fully that the devil *was* in him. 'And I will tell you,' I said, 'why he is.

It is because you have been a thief, a drunkard, and a liar—in fact, an all-round scoundrel. But if you will pray to God to forgive you, and if you will lead a new and honest life, you may snap your fingers at the devil.' " The man got well, &c. In fact, C. Kingsley, not being a utilitarian philosopher, succeeded in putting new passions into the man's heart, which drove out the old ones. A utilitarian philosopher would only have hopelessly argued to the man that his mode of life was unfavourable to his happiness, a fact he would have known already by experience much better than the utilitarian philosopher. But as I say, Mr. Kingsley was not a utilitarian philosopher, and he knew that the lower passions can only be driven out by higher, warmer, and stronger ones—that is, by what the New Testament calls the baptism of fire. Utilitarian and Stoic moral maxims and maunderings are only the baptism of water-gruel, and have no effect whatever.

The physical-scientist's notions about prayer argue a strangely confused condition of mind. A plant striving after a higher life, stretches out its tendrils towards the warmth and light of the sun, and thus counteracting the force of gravity, rises from the ground and attains what it strives after. If it had not striven, it would not have attained it. A man, like the plant, also strives after a higher life, but, unlike the plant, he strives articulately, for it is his nature to put his feelings and passions into words. Indeed, it is observed as a rule, that if he does not put his striving into words, he does not know what he wants, and so not only gets nothing, but is pulled down by the lower strivings, just as the plant is pulled down by gravitation if the life within is too weak to counteract that force.

I know that Professor Tyndall says that religion

should be of the silent sort ; and if all he wants to strive for is to grow like a plant, nothing can be better. But some people want more than this. Still there are conditions necessary. In the first place, the prayer or articulate striving must not be for something contrary to nature. It must be *according to* the course of nature, however much above *ordinary* nature. A plant might strive to crow like a cock for ever, but the strife would be vain. So also if a cloud is over-charged with moisture, the man who prayed for no rain would be like the plant that tried to crow like the cock. What is *against* nature must be horrible and monstrous.

Again, impossible things are impossible. To pray for black to be white would be absurd, for not even Almighty power could make it white. But putting possibility aside, no one can know how much rain is best on the whole. Charles Kingsley in Germany remarked to his neighbours at a *table d'hôte*, that the rains must have done much mischief. "No," was the answer, "they were much needed to replenish the wells after three years of drought." Again what is good for A will be bad for B. A few years ago at Bonn, in Germany, there were two processions of peasants, each eager to get first possession of the shrine of St. Peter's Chapel. The one party came from the vineyards to pray for rain, and the other from the corn district to pray for fine weather. They both got to the chapel at the same time, and then there was a free fight. 1860 was a very wet year, and the farmers were all praying for fine weather, but the season was so healthy, that the doctors, chemists, and druggists were half ruined. "How can we ever know," says Charles Kingsley, "that in praying for rain to cease we may not be praying for some pestilence to come? Let us not pray for fancy blessings, that may be really curses, but let us

pray for those good gifts which God has promised to them that ask him—for his Holy Spirit and for the spirit of wisdom and understanding. These things concern the spiritual world, the laws of which are different from those of the physical world, as proved by actual experiment of those who are qualified to try them.” By these qualified persons Kingsley means those who strive after a godly life, and, by striving, attain. Dr. L. Beale, the most distinguished microscopist in England, also teaches as the result of his microscopic observations, that the laws of life and the laws of the physical world are totally different, and that nothing is learnt of the one by studying the other.

The third-class physical-scientist however of the average order, will or can see nothing in all this. All talk about a holy spirit, and higher life or nobler passions is incomprehensible to him. He is like Sidney Smith, who, not being able to see the beauty that there is in musical harmony, denied that it has any; or like the very old man, whose passion having all died within him, cannot imagine what passion means. In fact, he is what Jesus Christ always called “a dead man.”

As to spirituality of the loftiest order, perhaps the Western European and Aryan nations are not the most qualified to judge. Mr. Disraeli once said in the Hebrew manner, that God never spoke to an Englishman. This put in the European more abstract form of speech, means that an Englishman never reaches the highest heights of human nature, and is never inspired by the godliest passions or inspirations, though he may make the best magistrate, the best colonist, the best practical man of business, and the best governer of countries. But spiritual teaching he has got from the Hebrew race. To this race, says Mr. Goldwin Smith, “we are far more indebted

than to all others." Perhaps Mr. Disraeli, instead of saying "never," had better have said "rarely."

F. Maurice and Charles Kingsley took the same view as Mr. Disraeli, though they did not express it in the Oriental manner, and Byron said, "The cold in clime are cold in blood."

The specially English characteristics are justice, hard-headed common sense, practical energy, and physical robustness, which most admirable things account for Englishmen making the best colonists and the best rulers of men. But, as a necessary consequence, the leaning over to this side leads to ignoring and despising or even denying the existence of gifts and graces that are finer in quality. England is certainly not the best country for genius or supreme spiritual excellence to receive its due. The former, though enjoyed, is apt to be more or less despised, and the word saint is a nickname. So the man of genius in England must not be surprised to find himself mixed up in a confused way with actors, artists, and mountebanks, as men whose business it is but to entertain us in our leisure hours; and the man of supreme spiritual excellence must not be surprised if he finds himself called a prig. Like likes like. And unlike dislikes unlike. Indeed, to many people the above saying of Mr. Disraeli's, whether put in his Oriental or in the European form, will be incomprehensible. "Highest heights of human nature," the third-class scientist will exclaim, "what in the world does the thing mean? I can analyze away anything whatever until it becomes nothing at all; how then is it possible to go farther or rise higher than that? It is itself the superlative degree; so there can be nothing beyond." Something of this sort many people would no doubt say. It is not given to every man to believe in higher levels than his own. Whilst the racing

jockey thinks riding the winner of the Derby the highest height, to the pick-pocket no higher state of things is conceivable than the opportunity to snatch a purse whilst the policeman is well round the corner.

Few things are more amusing than the way the commonplace materialist will give his opinions about Christianity. It is like a man who cannot tell 'God Save the Queen' from 'Rule Britannia,' giving his opinion about Beethoven's Moonlight sonata; or like one who is born like Miss Martineau without the sense of taste, giving his opinion about a '64 vintage claret. Christianity has proved itself to be the greatest spiritual force recorded within historic times. This necessarily means that it is the product of the deepest and highest passions, for action varies as passion or life. Thus any man who does not understand these passions by experiencing them in more or less degree (and there is no other way of understanding them)—I say any such man makes as great a goose of himself when he gives opinions about Christianity, as the blind man would who gave his opinions about the effects of different combinations of colours.

One more quotation about prayer. "The materialist," says Mortimer Collins, "cannot see that prayer has its place in God's great design, and that the supreme cry of a human spirit to its Almighty Father may be a stronger force than a telegraph message. The dull scientist who would divide a hospital and pray for one section and leave the other unprayed for, is incapable of knowing or even guessing what prayer means." I dare say that the doctor, whoever he was, who made this marvellous proposal about prayer in hospitals, may be in mere understanding an able man to any degree whatever. And yet what a poor blockhead he must be essentially.

Scientific experts and specialists are admirable people

in their places, but when they leave those places, they often make themselves very ridiculous. "A man," says Mr. F. Garrison, "whose whole thoughts are absorbed in cutting up dead monkeys and live frogs, has no business to dogmatize about religion." It is like a tinker giving his opinions upon 'Paradise Lost' on the strength of his mending kettles well. "There is something," says Mr. Mallock, "very grotesque in the notion of a savant emerging from the examination of a beetle's wing or a speculation upon parallel lines, and presenting himself before men and women flushed or embittered with the joys, passions, ambitions, and pains of life, to instruct them on the strongest motives to action and the highest objects of life." And what is it that these people tell them? For the most part nothing else but "There is nothing like leather." "Devote yourselves to scientific research, and then you will get to know everything in the world." But even if there was any truth in this, man does not want primarily to know, he wants to *be*. He wants to act, not to analyze; to rejoice, not to maunder about greatest happiness to the greatest numbers; to live, not to philosophize about living. Still, after all, we want our experts, physical scientists, and specialists. Indeed, for the secular requirements of modern societies, they are absolutely necessary people.

Christianity is the religion of faith, hope, and charity or sympathy. That is to say, Christianity is the religion of the joyous affections and passions. Even Professor Clifford confesses that it leads to happiness, which is rather a hint that his own pursuit of physical science does not lead to happiness. "He that increaseth in knowledge," says King Solomon, "increaseth in sorrow." Mr. Huxley says that we live in a world full of misery and sorrow. So he too, I suppose, can see

nothing but misery in the world! A tumbler full of water means a tumbler with nothing else in it but water. Well, it all goes to show what I always maintain—that a life exclusively devoted to analysis and scientific or philosophical investigation almost invariably leads to death of some of the faculties. A sort of premature old age comes on. The capacity for joy, and therefore for recognizing joy in others, goes, and the glorious beauty of the world, with the life, the happiness, the brightness, and the goodness that is in it, all seems but ugliness, misery, ignorance, and stupidity. He who lives exclusively on the fruit of the tree of knowledge loses the capacity to taste the fruit of the tree of life, or even to be conscious that there is such a fruit. Such men can know little of Christianity, for Christianity is the science that teaches all about this fruit—the science that is of life, beauty, goodness, happiness, and (to use the Biblical term for the extreme of these things) blessedness. To speak more accurately still, Christianity, instead of being only the science of these things, is these things themselves.

W. R. Greg talks of "the philosopher speculating with ever-growing perplexity on the insoluble problems of existence, till all faith and love die out of him."

The exclusive habit of analysis

"Hardens a' within,
And petrifies the feelin'."

as Burns says of sensuality. And how can it be otherwise? A new "joy-bringing morn" appears. The sun rises in its glory, and the world is full of life, bliss, and exultation. Yes, but our scientist is in a darkened room with his eye glued to a microscope, looking about in a narrow ray of light charged with "minute particles of suspended matter" for a germ of that dreadful sub-

variety of zymotic disease, called scarlatina-rubeola-morbillosa. How can this man know anything about life and happiness? especially as he passes his time doing little else, which has given him a chronic liver complaint, so that he looks on everything "with a jaundiced eye." And yet after all said and done, if there is such a thing as a germ of scarlatina-rubeola-morbillosa, he undoubtedly wants finding, and we ought to be thankful that men can be found who are willing to look for him.

Mr. Huxley's observation about the misery of human life has led me on to make these remarks; but they are only suggested by him, they do not refer to him, for I know nothing about him, and people are often different from what one would expect from their writings. Mr. Huxley, for aught I know, may personally be "jolly as a sand-boy," or, like the admirable Mark Taply, who always continued cheerful under the most adverse circumstances the novelist could imagine, or like Shelley's skylark unceasingly panting forth a flood of rapture most divine, or like some of the holy men of old (as indeed of all times), who "rejoiced in the Lord alway."

Though the world is not *full* of misery, there are some sad things in it, and one is, that the man of science, who devotes his whole life to the material or dead side of nature, almost must, as men are made, suffer for it spiritually, and become more or less a materialist; and yet we want the knowledge about the dead side of nature. He who devotes himself exclusively to one thing always gets to look on the universe through spectacles strongly tinted, to say the least, with that one thing. The tanner said, "There is nothing like leather," and yet we want leather. A man may have a face as of an angel from heaven, and the qualities of a demigod, but his tailor when he meets him in the street is dead to it all, and only

looks down with loving delight at his trousers ; and yet we want trousers. The bootmaker's eyes will grovel down to the ground to his customer's boots ; and yet we want boots. The analyzer devotes his life to ferreting out hosts of little facts about matter ; and yet we want the little facts. "He who increases in knowledge increases in sorrow"—that is, loses "life" and happiness ; and yet we want the knowledge.

Mr. Huxley quotes with approbation David Hume when he says, "If we take any volume of divinity let us ask, "Does it contain any abstract reasoning concerning matters of fact ? No. Then commit it to the flames, for it can contain nothing but sophistry and illusion." So Messrs. Hume and Huxley would make bonfires of the Bible, with the Sermon on the Mount, and of all the highest writings and poetry in the world, like the great mathematician who threw 'Paradise Lost' into the fire because "it proved nothing." Now the truth is (though it hardly need stating), Godliness, noble passions, and poetry, or consciousness of spiritual beauty are quite as much true facts and realities in the universe, as granite or the old red sandstone, and of course unspeakably higher ones.

But the materialists will not see this. Mr. Leslie Stephen, writing against religious faiths, calls them mere dreams as opposed to realities. What he means by realities he does not tell us ; but I suppose granite, the old red sandstone, and other hard substances. And I suppose he looks on a man from the materialist's point of view as a mere aggregation of a certain number of minute hard atoms. Shakspeare, on the contrary, looked on man from the spiritual point of view, and said he was "such a thing as dreams are made of ;" thus ignoring the material side altogether. But Shakspeare was a poet, and poets are foolish people, whose writings we

are given to infer by Messrs. Hume and Huxley, should be committed to the flames. J. S. Mill's school goes beyond Shakspeare, and not only ignores but denies the material side. "A man," says this school, "only means a succession of thoughts, feelings, and sensations." Another school of scientists, with Faraday at its head, also denies the material side, and resolves matter into centres of force. Another set of eminent men deny that there is such a thing as force ; and Mr. Huxley tells us we know nothing about what matter is. Who shall decide when philosophers disagree ?

Strange folks the materialists, who will glorify themselves over the discovery of some new dead chemical compound and call it truth, whilst they laugh to scorn as false and meaningless that high form of exultant life which inspires men to sing such songs as, "Therefore with angels and archangels, and all the company of heaven, we laud and magnify thy glorious Name : Glory be to thee, O Lord, most High."

Mr. Huxley quotes Goethe's despicable lines—

" Warum treibt sich das Volk so und schreit? Es will sich ernähren,
Kinder zeugen, und die nähren so gut es vermag.

* * * * *

Weiter bringt es kein Mensch, stell' er sich wie er auch will."

"Why do people make such a fuss? They can feed themselves and beget and bring up children. They can do no more, try as they may." Of course a lie of the first water, and Goethe proved that he really thought it so by devoting his life to poetry and science instead of to eating, and to nursing babies. A man's beliefs are shown by his actions, not his words. It would not be a lie in some people's mouths, but only a false statement. But Goethe, with all his power of poetic imagination, had a very fair share of materialism in him. Materialism is a

tone of mind more than a set of mere opinions. It is the tone which tends to pooh-pooh all high faiths and noble passions by analyzing them away to nothing—the tone whose tendency it is to belaud the animal machinery and to belittle the soul—to dwell on the material, or what is called the dead, side of nature, and to ignore the spiritual or living side, and to destroy all existing motives for right action without putting any others in their place. “Some scientists,” says Dr. G. Wilkinson, “are never happy but when they have a faith to torment, a doctrine to deny, a conscience to harrow, or the education of little children to ruin.”

It may be said, Why declaim against materialism? It is waste of breath. The thing is a failure. Men and women still hate the very word itself, still believe in duty, still try to bring up their children in the fear and love of God, still teach them to know right from wrong, and still neglect to treat them like mere little irresponsible automatons; besides which, such terms as “soul,” “spirit,” “religion,” “godly,” “divine,” “piety,” “holiness,” “devotion,” &c., are still not only in our dictionaries, but even in the newest and amended editions of them. The teaching of the materialists is but the teaching of Lucretius, and if he, with his great genius, failed, is it likely that a few nineteenth-century scientific experts and specialists should succeed? Dr. Jowett says that the ancients had the same thoughts, the same difficulties, and the same opposition between science and religion as ourselves.

Now all this is quite true. Still, some of the leading men of the school of Lucretius are in their way extremely clever, besides being men apparently of the best intentions, so there is no knowing what mischief they may not do in individual instances.

An odd thought has just come into my head. If "God," "divine," and all words implying the consciousness of supramundane things are to be removed from the language of men, how are we to swear? What will be our form of oath? Shall we take a compendium of M. Comte's works in the right hand, kiss it, and state that our evidence is the truth, the whole truth, and nothing but the truth, so help us "matter"? Or what shall we do?

Again, how about swearing in another sense? The old oaths will be unmeaning, and so will have to be dropped. I once went down the Mississippi in a steam-boat. Every order given by the chief mate was accompanied with the most frightful imprecations. I suppose it was the only way he could get himself obeyed. Now what I want to know is this, What, under the new dispensation, are chief mates of Mississippi steamboats to do? For their execrations will become mere gibberish, like "abracadabra" or "high cockilorum." It really seems to me that the poor men will be helpless, for the contrivance of the two Spanish nuns, though successful in their case, would hardly avail under the circumstances. These nuns on a journey were horrified at the oaths of their mule driver, so they told him to discontinue them. But immediately he did discontinue them the mules discontinued to go on. So what was to be done? At length the superior nun, who was a woman of resource, hit upon a contrivance that completely answered. Two or three of the most effective imprecations were selected and divided into syllables, and then the driver and the nuns each pronounced one of them in its proper order. Thus every sentence was complete; the mules went on; the process was vigorously repeated whenever the animals seemed inclined to lag, and they reached their journey's end without any one of the three having been

guilty of uttering a single oath the whole way. Now, we all must admire the ingenuity that was so successful in this instance, but the difficulty to be overcome was so different that it is hardly a case in point. Although no one of the three uttered an oath, still the oath was there in all its full meaning. But in the case of the Mississippi mate of the future the very words themselves will have become meaningless. So again I ask what is the chief mate of a Mississippi steamboat to do in future? We all know the common form of his imprecations, how he first appeals to Almighty God to consign a soul to everlasting torment, and then finishes with the words of the order he happens at the moment to be giving, and shouts out, "Haul in that rope, you infernal scoundrel." But in our scientific future hardly a word of it all will have any meaning. Then how can he expect to be obeyed? We will, for conciseness, only speak of the last two words "infernal" and "scoundrel." Now, "infernal" implies consciousness of something pretermundane, and "scoundrel" means a wicked man who does not do his duty, and duty, if men are automatons without free agency, is a meaningless word. Thus the whole thing becomes a farce. But what is the chief mate to say instead? A materialist's only "evils" seem to be religious beliefs and want of scientific or philosophical knowledge. So perhaps the chief mate of a Mississippi steamboat will give his orders somewhat in this way: "If you do not haul in that rope, you believer in God, you, I hope you may never understand anatomy, nor even Mr. Bentham's philosophical principles." Well! I hope it will answer. But it will be rather tame, to say the least of it. For myself I must say that if I were a freeborn American citizen I do not think I should pay the slightest attention to such expressions.

Is this too flippant a way of treating such things? Perhaps. But I am dealing with materialistic men who pass their lives glued to microscopes or other like things. How can I spend indignation upon such people, especially as they are often excellent in their negative way, and the facts they discover may be really and even extremely useful to the secular side of men's lives?

Pretermundane ideas form an enormous part of human nature. I have just touched upon one side of them—those words, namely, that express the consciousness of preternatural evil—but it is the same with the other side. Take the magnificent words of our Church service, “Therefore with angels and archangels, and with all the company of heaven, we laud and magnify thy glorious Name; evermore praising thee, and saying, Holy, holy, holy, Lord God of hosts, heaven and earth are full of thy glory: Glory be to thee, O Lord most High.” But in the language of our scientific future not one word of all this will have any meaning except a few of the prepositions and pronouns. All the rest the mere analyzing materialist thinks to be without meaning, because he fancies he can trace it back through savagery (where it appears in the form of fear of evil spirits) and the animal world, down through gases and earths, and at last to nothing at all. But the one is something, the other is nothing. Something is not nothing. The whole thing is the most ridiculous confusion of mind. The man thinks the nothing everything and the everything nothing. “Our analyzing scientists,” says Mr. Mallock, “trace back and back in the hope of tracking what they seek to some luminous source; but gradually they find it grow dimmer and dimmer till at last they discover that it vanishes into a dark cavern. Of what is concealed in the cavern they know nothing. No method of theirs can fathom it.

They talk much of time and space, but as a rule can give no account of their notions of either. They talk much of doubt and certainty, but what they mean by knowledge they cannot tell us. All that physical science can say of God is that it can find no trace of him, though possibly when the logical opinions of the world become more settled it may discover that his existence is a necessary postulate."

"The materialist," says Professor Blackie, "instead of believing in God or a creative mind sets himself in a pretentious, wordy way to evolve all things out of a dark hollow centre of nothingness, and binds them together with a girdle of black, impenetrable necessity."

"Horrible," says C. Kingsley, "must the aspect of nature become if, instead of the Divine Eye, there must glare on us only an empty, black, bottomless eye-socket."

A man who can suppose that the universe and all that is therein is at bottom nothing, because he thinks he can analyze and trace everything back to nothing, must be capable of supposing any imaginable absurdity to be true. I wonder whether he would believe the story of the juggling tumbler, one of whose feats was to mount a ladder, pull it up after him, then go up again, then pull it up and again mount it, and so on, till he was at length out of sight. I dare say he would—for at any rate the ladder had nothing to rest upon.

The analyzer tries, by tracing back to the beginning, to find out the meaning of a word, which word, with its meaning, he and his ancestors have been during an infinitude of years building up to its present magnitude. Take for instance the word "religion." Well, this word, with all it indicates slowly built up through the ages, is to be interpreted by studying the chemical composition of the first stone that was put into the

ground at the foundation. Instead of looking on the spot and at the moment into his own heart, and at his own surroundings in his own time, for the meaning of the word, the analyzing materialist retraces his steps thousands and thousands of years, and then looks about to see what he can see. Well, he is taking a deal of trouble, to say the least of it, and going a long way to look for what is close at hand. He is like the American backwood settler, who, when his wife fell into the well, rode thirty miles to the nearest town to buy a rope to pull her out with, though there was a ladder within ten yards of the spot. To carry the simile farther, the ladder would have brought up a living woman. The rope only brought up a dead one. But I will carry it a step farther still. The backwoodsman did not wish to find his wife a living woman.

A word explains itself to me better than any definition or analysis of it can do, for this word, with its meaning, has been inherited from generation to generation, and thus has become part as it were of my flesh and blood. But the definition of it is only some disputed and fancy definition of some fancy philosopher—say of Mr. J. S. Mill. But inasmuch as Mr. Mill's fancies do not form part of my flesh and blood, the definition has only confused what before was clear. To give an instance, I know perfectly well the meaning of the word "belief." So no analysis or definition of the word can do anything but confuse me and lessen the force of it. But Mr. James Sully seems to think differently, and tries to help us to understand it by defining the word "belief" to mean "a reproduction of a past sensation by the medium of a present idea felt to be like it." Now this seems to me about as successful an attempt to stir up the mud as one often comes across. And yet this is the

way some of our analyzing philosophers pass their lives —turning lovely bits of transparent water into dirty puddles.

Vast and endless confusion comes from meddling with the meanings of words. Dr. Tyndall, after admirably describing some marvellous manifestations of activity, motion, and "life," tells us that the cause of all these manifestations is what he means by the word "matter." Yes, very likely, but the question is not what Dr. Tyndall means, but what the English-speaking nations mean. That is the real meaning of an English word. Professor Blackie, talking about Dr. Tyndall's fancy definition of "matter," says, "Why confuse all reasonable discussion by using words in entirely novel and self-contradicting senses?" A drunken collier was had up for thrashing his wife. The magistrate, after fining him heavily, said, "I don't know what you call this treatment of your wife, but I call it savage cruelty." "Oh," hiccupped the still fuddled brute, "you call't shavage cruelty, do you; well, I call't milk yuman kineness."

"We have all," says George Eliot, "got to exert ourselves a little to keep sane, and call things by the same names as other people."

Still, after all, we must never forget that England is a free country, where every man may put any meaning he likes to any word whatever. Thus, if I say that "black" is what I mean by the word "white," no one has any business to tell me that I have no right to say so, though of course he may think me an ass, or even call me one if he does not mind being kicked.

Language is at best an imperfect instrument of thought, but to alter the meanings of words is to make it still more imperfect. A word with its meaning is ingrown, ingrained, and inherited from generation to generation

for thousands of years. To alter this meaning is to confuse or destroy a part of human nature. All very well if something better is put in the place, and even then the thing should be done by new words ; but our materialists are mostly negativists. They put nothing in the place.

Professor Blackie complains of "the mist, confusion, and slippery ambiguity in Dr. Tyndall's phraseology."

I will now wind up my remarks about confusion of mind in our scientific instructors. Even confining myself as I have mostly done to each man's self-contradictions, the subject is an endless one, but if I passed on to showing how all our teachers differ one from another, even the world itself could not contain the books that would have to be written. But it must be so. There is no help for it, for besides no two men being alike, the different types and classes of mankind are so differently constituted as to be hopelessly irreconcilable. Take one question only, that of peace and war, and consider what is thought about it by the two extremes of educated human nature, namely, the thorough-going materialist and the man whose thoughts dwell more on the spiritual and living side of things. Now the mere materialist (usually a radical) has from the fact of his being a *mere* materialist no motive power except the desire to gratify the senses ; intellect being of course an instrument common to both classes. Having then no objects beyond gratification of the senses, ease, comfort, and material well-being, the materialist naturally condemns war or anything else that may lead to his being shot. But the man at the other extreme takes a totally different view. He believes that the *mere* gratification of the senses is not worth much ; that our business in the world is the manifestation, the development, and the improvement of character ; that life means energy ; that difficulty is its field, and it is

happiness to overcome the difficulty ; that the proverbs “ No pains, no gains,” and “ No sweat, no sweet,” are wise proverbs ; that through much tribulation men enter into the kingdom of God ; that the uses of adversity are sweet ; that Christianity is a manly religion and teaches us “ to endure hardness ” ; that ease and luxury are apt to mean spiritual death or stagnation ; that “ human nature can stand bullets better than beer ” ; that patriotism, whether the highest of passions or not, is at any rate infinitely nobler than the love of ease and the gratification of the senses ; that active unselfishness is everything, whilst love of material well-being, however good as far as it goes, is comparatively nothing ; that, according to history, ease, luxury, and riches are more fatal to countries than war ; that human life means something more than “ beer and skittles ” ; and, finally, that as far as the teaching of history hitherto goes, however things may be in future, the only way the human race has escaped degeneration has been for the stronger or more virtuous races to take the places of the effeminate ones by fighting in some way. Now, I ask, how can these two classes of men possibly come to an agreement on the question of peace and war ? So also with all other important questions. To give only one instance, namely, the difference of opinion at the present time about England undertaking to assist Turkey more or less in the establishing of good government in Asia Minor. How can we possibly expect agreement upon this question ? How can we expect the man who looks upon human life as a field for energy, and for undertaking instead of avoiding responsibilities in a good cause—who agrees with Shakspeare that “ man is born to do benefits ” ; who considers that just as “ it is better to have loved and lost than never to have loved at all,” so it is better to

have tried and failed than never to have tried at all ; and who even recognizes that some of the greatest real successes in the history of the world have been the greatest failures if only judged by worldly success, material prosperity, and well-being—I say how can such a man as this possibly agree with the man whose only thought is whether he will or will not have to pay twopence in the pound more income-tax ?

When I say that the thorough-going materialist is usually a radical, I do not mean that the radical is usually a thorough-going materialist, for he is not. The sheer materialist is a rare and exceptional person. Mr. Goldwin Smith, I believe, calls himself a radical, but he writes as few can write against the materialists and the repudiators of religion. “ To four races,” he says, “ we are indebted for the four elements of civilization. To the Phœnician for commerce, to the Greek for literature and science, to the Roman for government and law, and to the Jew for religion. And our debt to the Jew is the greatest of all.”

Few people see what we owe to the Hebrew race, even without going farther back than modern times. Their pre-eminence in music is seldom disputed. Spinoza (called “ the God-intoxicated man ”) heads modern philosophy, and H. Heine provides texts, of which much criticism of the day, from Matthew Arnold downwards, are but paraphrases. Mr. John Bright has always been a puzzle to me. I wondered where he got his various and somewhat contradictory qualities from. At length the mystery is solved. He is, I understand, partly English and partly Hebrew in blood.



CHAPTER VIII.

ABOUT PROFESSOR TYNDALL AND HIS "GERMS."

I WILL now send my reader back to page 57. He will find that I was showing how Professor Tyndall and the doctors have no established grounds for asserting bacteria to be the *causes*, instead of only the accompaniments, of disease; and how the Professor tells us that he hurt his leg in Switzerland, and that the abscess that then formed was caused by hordes of germs of bacteria escaping from bottles of infusions of fish and turnip he had in his room for experimental purposes. Now, I deny this explanation. I believe it to be all imagination. I have often known a horse get an abscess after a wound, though there were in the vicinity no infusions of fish or turnip from which bacteria of putrefaction could escape. I myself once had an abscess, but there were no bottles of fish or turnip for experimental purposes near me whatever.

I have also often known a colt, that happened for some reason to become out of health, get its skin full of minute organisms, whilst another, in high health, living in the same place, eating out of the same manger, and rubbing against the same post, remained perfectly free from them.

In fact, the little wretches are impotent against perfect life and health. They must have death, or partial death—that is, disease—to work in. In fact, the disease must come first. Vitality in sufficiency will resist anything.

The German, Dr. Oidtmann, tells us about a child, six years old, who had never been vaccinated. Its mother had small-pox in its worst form. The child slept in the same bed with her, and when the mother's eyes were swollen blind from the disease, took sweets out of her mouth and swallowed them; but the child never caught the small-pox. This shows what a high degree of life and health will do against deleterious influences. I have met with accounts of many such cases.

Dr. Tyndall quotes the fermentation of grape juice as another instance of the effect of germs of ferments. Yes, but men have first to kill the living grape, to stop the rapid circulation of its blood, to draw it off, and then to leave it stagnant and dead. *Then* come the ferments. Fermentation is a process of decomposition that takes place *after* death, stagnation, or disease. Thus, both of Dr. Tyndall's illustrations tell against himself, that is, against the side of the question about disease and contagion that he gets from the doctors. Still, he does not seem to see that they tell against himself.

In exclusive attention to one side of a question, or in the heat of discussion, people often say things that tell against themselves. A man, expostulating with his son for coming home late at night, said, "If I at your age had done such a thing, my father would have locked the door, and left me out all night." "A pretty sort of father you must have had," said the son. "He was a deuced sight better one than yours, you young scamp," shouted the father.

Now, here we see this young man's parent so full of

contradicting his son that there was no room left for consciousness of the real significance of what he said. Indeed, absorption of mind, in one view of a matter, sometimes absolutely shuts out all other views, however true or fitting they may be.

A few years ago there lived an eloquent serjeant-at-law, one of whose legs was a cork leg ; but no one knew of this except his most intimate friends. One day the serjeant was addressing a special jury in his usual impassioned manner, when a young lawyer who was in the secret of the cork leg, thinking he saw his way to earning a small sum of money, whispered to a newly-fledged barrister, " Look at old Buzfuz there, how hot he is over his case. Now, I'll bet you a sovereign I'll run this pin right into his leg, and that he will be so absorbed in his subject that he will never notice it." " I'll take you," said the newly-fledged one. The next instant the minute weapon was buried up to its head half-way between the serjeant's foot and his knee, whereupon a scream of agony filled the court, striking terror into the hearts of all. " By George !" cried out the operator, " it's the wrong leg, and I have lost the bet !" Now, of course, the extreme of sympathy and contrition was the frame of mind proper for the occasion, and the view that ought to have been taken ; but instead of this, the man was so full of his one idea—the loss, namely, of his bet—that it rendered him unconscious of everything else, and absolutely incapable of looking upon the matter from the right point of view.

A German was glorifying, to an Englishman, German soldiers, at the expense of English ones, and said, " As for your army, zey cannot hold a candle viz ze Germans. Our guards are finer men zan yours, and your line is noveres compared viz ours."

"I think," said the Englishman, quietly, "that I could name one regiment in our army that is a far finer one, in every respect, than any in the German army."

"Vat is it?" shrieked Mein Herr.

"The Horse Marines!" answered the Englishman.

"Dat is a lie," yelled the German. "I have seen boze yours and ours, and ours is mosh ze finer of ze two!"

Here, again, the wretched man's mind was so dead to every consideration beyond his one idea, that it rendered him absolutely reckless in his assertions, and stone-blind to truth, or even to caring whether what he said was true or not. But this, I need hardly say, is a very extreme case of the principle I am illustrating, and cannot apply to Dr. Tyndall.

The people who were shut up in the Black Hole of Calcutta died of malignant fever from overcrowding. But, I suppose, Professor Tyndall and the doctors will tell us that they died from catching the disease by infection, and that they would have remained in perfect good health if there had not been germs of the fever organisms in the air, which germs had been handed down by direct descent, from generation to generation, from the first typhus-fever organism that made itself in the time of chaos.

Professor Tyndall must also, if he is consistent, tell us that the inmates of the Black Hole would have come through their ordeal in perfect health and safety if each of them had only breathed through cotton wool, and so intercepted the germs of the typhus parasite. I myself believe they would have died just the same.

Nothing is more curious than the way fashion changes in medical opinion. Formerly it was believed that diseases were connected with small mystic numbers, such as 3, 9, or 7. Thus we read in the old books that for

epilepsy the patient must creep head foremost three times a day for three successive days down three pairs of stairs. Then he would be cured. At the present day this particular superstition seems to have died out. We have plenty left, but not this one. It is no longer single mystic numbers; we are all now for multitudes. Each shade of disease, we are told, is primarily caused by its own germs of its own special breed of mystic living organisms, innumerable, invisible, and undiscoverable by any means whatever; and the only way to ward off disease is to wage a direct war to the death against these hosts of imaginary little creatures. Anything *may* be true; but so long as the medical and scientific experts differ, as they do, the public can settle nothing, and therefore nothing is settled, for all questions are settled by the public, so far as they are settled at all. The rival experts give their evidence. The public judges. Where all the experts agree, as they often do in some of the exact sciences, the public judges according to the agreement. Where the experts all differ, as in medicine and other inexact sciences, the public judges that judgment is impossible, and so only repeats the old saw, "Who shall decide when doctors disagree?"

By the way, one of my critics seems to doubt the accuracy of my account in "Our Medicine Men" of the way medical advocates for vaccination differ upon that question. But it is taken down almost word for word from the evidence before the parliamentary committee.

I say that every shade of fever, from a common cold up to Oriental plague, *may be* caused primarily by its own germs of minute parasites, just as deaths from snake fangs, mad dogs, arsenic, mercury, prussic acid, and all the deadly gases *may be* caused by them, or as the moon

may be made of green cheese, for the negative of no one of these *may be's* can be proved. But the whole question about germs is little else, as yet, but a lot of opposition guesses by opposition scientific experts. It is nothing to an honest man which side wins. He only wants truth. Some, I fear, care more for triumph to their side than for truth. But can we call a man who makes truth play second fiddle to his vanity, strictly honest? "Le seul honnête homme," says Rochefoucault, "est celui qui ne se pique de rien."

I wonder whether our scientists are as careful as they should be about their evidence. In all other matters accurate and repeated corroboration is wanted. But all our scientists seem to require is the report of investigations made by only one person, who (to say nothing of errors) is perhaps ready to say anything whatever to get his name brought before the public. There undoubtedly are men who will do anything whatever for notoriety. "There are men," says George Eliot, "who don't mind being kicked blue if they can only get talked about."

Inasmuch as about germs of disease, doctors as yet hopelessly differ, the wise "*vox populi*" decides that nothing is decided. The reason the *vox populi* is so much wiser than the voice of any particular expert is that the public is more all-sided and free from bias. Whereas the expert is almost always tied by the leg to some theory on which "*il se pique*," and is rarely free from bias, if it be only the bias of sticking up for some opinion to which he happens, generally by chance originally, once to have committed himself.

The question about germs is insignificant as the despicable little creatures themselves, unless there is some practical result upon human life and human conduct, and, therefore, upon human happiness. "The only

object of knowledge," says G. H. Lewes, "is to influence conduct." But how can knowledge about germs influence conduct? "Kill them," says Dr. Tyndall. Yes, but how? Except by his disgusting carbolic compounds he only gives us one hint. He tells us that if wine is boiled up to fifty degrees centigrade, all the minute animalcula will be killed and the wine will not turn sour. But how can we boil a scarlet-fever patient up to fifty degrees centigrade, and so kill all the abominable little organisms that are working their wicked will within him? No, no, give me cleanliness, good food, good water, good habits, and good ventilation. I will back these things against carbolic acid, or even against boiling up to fifty degrees centigrade.

And, after all, boiling does not always seem to answer. Dr. Tyndall holds that the course of nature is *not* uniform, for that, whereas spontaneous generation took place a number of years ago, it never does now. Dr. Bastian, G. H. Lewes, and others, say it *is* uniform, and that spontaneous generation takes place now just the same as ever. Dr. Tyndall says he can prove his point, for if the germs are boiled no new ones come to life. Dr. Bastian does boil them, and new ones do come to life again. "Oh! but," says Dr. Tyndall, "that test won't do; we must find a new one." And so he may go on requiring new tests for ever, inasmuch as the thing never can be proved; for to prove a negative is proverbially impossible. Now here is undoubtedly "a very pretty quarrel as it stands," and when one considers that it can never be settled, and that a number of people appear to like quarrelling about such things, it really seems quite providential.

We all know that the creed of Dr. Tyndall's school about the origin of life, is (to put it very roughly, and all scientific statements have to be put very roughly, com-

pared with the infinite diversities and insensible gradations of nature)—I say, we all know that their creed is somewhat as follows: Many years ago our earth was a burning mist, which, as it cooled, at length became fit for live creatures. On the day this took place a very small organism made itself. This was our first parent, and no living creature has ever made itself or been made anew since. As soon as it had made itself, the animalcule set to work and laid a great many million eggs, as is the wont of such minute things, and the produce from these eggs spread themselves over the face of the earth. Indeed every one of them survived, because nothing had as yet been born to eat them up. They in their turn laid more eggs, some in one place some in another, the produce from which was variously modified by different degrees of warmth, and by other circumstances. The strong ones ate up the weak ones, and only the fittest survived. To relate how different species gradually became evolved one from another, would be endless and impossible, but a few cases may be given; as, for instance, how some fish happening accidentally to get on the land, did so well that they remained there and became snakes, one or two of which after a time being accidentally born with legs, got on so much better than the others that they survived, and their progeny became lizards. A few of these being accidentally born with hind legs longer than the fore ones, became, by the survival of the fittest, kangaroos. Some cows in hot countries were accidentally born with longer necks than the others, so that, as they could reach higher branches for their food, they survived, and gradually became giraffes. At last came monkeys with long tails, which were useful to them for swinging on trees in search of fruit. This being so, one would have thought they must always keep their tails, and that

further transformation to a higher type would cease. And so it might have been, but for another principle that came in. We have seen what natural selection can do. We now come to sexual selection. One day a male monkey happened accidentally to be born without a tail, and all the females were so fascinated by him in consequence of this, that not one of the others had a chance; and so in a few years tails going completely out in that tribe, the tailless anthropoid ape became at length developed. After this (tails being got rid of) all was plain sailing, and finally, the world became inhabited as we now find it to be. Now, all this may possibly contain truth in its very small way, and whether it is true or not does not signify in the least, though, no doubt, all harmless truths should be learned, however small. I know that many people think that such theories if proved are important, and ought to modify in some way the lives of men. But this is very shallow. Origins are nothing, fully developed life is everything. Tracing back even to the supposed beginning of organized life explains nothing and alters nothing. A noble character is just as noble as ever, and nothing has been done to alter the nobleness. Human life—that is to say, human joys, griefs, faiths, hopes, and passions—remain the same as before. The delicious taste of an apricot is quite as delicious a taste, whether we have learned supposed facts about how monkeys lost their tails or not. Even tracing back to the first living germ of all life, if it could be done, would make no difference. All such things have nothing whatever to do with the taste of the apricot. The taste of the apricot means the relation between a developed man's senses and the fruit. George Eliot speaks with great scorn of mere fact-hunting as "that dwelling place of lost souls—that dead anatomy of

culture which turns the universe into a mere ceaseless answer to queries, as if one ought to know everything *about* the scent of violets, except the scent itself, for which one had no nostril." And in truth, any quantity of such knowledge contributes *nothing* towards knowledge of the scent. The only way for a man to know the taste of a peach is, not to trace out the origin of the fruit, but to eat it. The only way to know what joy means is, not to maulder about nervous tremors of the medullum oblongatum, but to rejoice. The only way to know what "loving one's neighbour as oneself" means is, not to trace back "the altruistic principle" to animals, but to love one's neighbour as oneself. Indeed it is the only way to know that one has a neighbour worth loving.

" You must love him ere to you
He will seem worthy of your love,"

says Wordsworth. The only way to know what reverence means is, not to anatomize the ganglionic centres, but to revere. The only way to know what worshipping God means is, not to examine the way savages fear evil spirits, but to worship God. And all these things will be according to development. The undeveloped will not know the meanings of them at all, the half-developed will half-know them, and the highly developed will know them in a high degree.

In one sense truth may be said to mean correct relation. We may not be able to understand either of two *things* themselves, but we can feel quite sure about the *relation* between them. Nobody knows what he himself is, and nobody knows what sugar is, but we can be quite sure of the relation between them; that is sweetness. Sweetness is a truth we cannot doubt.

That parallel lines cannot enclose a space, is truth.

That is to say, it is the correct relation between a developed man's mind and parallel lines. That parallel lines are not good to eat, is truth. That is to say, it is the correct relation between a pig's mind and parallel lines. That the creative origin of things comes from a source *higher* than man, is truth. That is to say, it is the correct relation between a Christian and Theist and creative cause. That it comes from a source *lower* than man, may in this sense be called truth. That is to say, it may be called the correct relation between the Atheist, or soul composed only of analysis and negation, and creative cause. Hunger and thirst after, or passion for, righteousness and godliness, is truth. That is to say, it is the correct relation between a Christian and the surroundings of human life. Pity is truth. That is to say, it is the correct relation between a Christian, or highly developed man and an object of weakness and suffering. Desire to eat up the weak and the suffering is truth. That is to say, it is the correct relation between the mind of a hyena and an object of weakness and suffering. Love and worship of the supreme spiritual Power is truth. That is to say, it is the correct relation between the mind of a developed or good man and "the unseen." Dread of the supreme spiritual power is truth. That is to say, it is the correct relation between the mind of an undeveloped savage and "the unseen." Curiosity about the inscrutability of "force, not ourselves," is truth. That is to say, it is the correct relation between the mind of an analyzing and passionless (that is neither good nor bad) scientist and "the unseen." What the relation between an inhabitant of the planet Venus and the "unseen" may be, we cannot tell. Therefore we cannot tell what truth about this matter may be in the planet Venus. Now, all those who experience

these truths, except the mere negative and analyzing scientist, remain just the same as ever. The evolution philosophy does not affect them in the slightest degree. That is to say, this philosophy, whether true or false, does not signify to mankind in the least. As to explaining "this incomprehensible world," we are just where we always have been, and always must be, so long as such expressions as "life," "force," "matter," time," "original cause," remain, as they still do remain, symbols to express so many forms of our ignorance.

The *mere* analyzing scientist is an extremely limited person, for he is a man of intellectual curiosity, but of nothing else. Compassion, as we have seen, is the true relation between a highly-developed man and suffering. Reverence is the true relation between a highly developed man and spiritual superiority. But to these truths the *mere* scientist is dead, or he would not be a *mere* scientist. In like manner he is dead to *all* the important truths (or correct relations) in human life.

I repeat that we only know about relation. We only know about the relation between living souls and the external world, and we cannot even conceive the meaning of the one without the other. There is one truth (or correct relation) for a sheep, another for a wolf, another for a Hottentot, another for a saint, and another for a scientist ; and there is far more difference between the truth of the saint and the truth of the Hottentot than there is between the truth of the wolf and the truth of the sheep. Indeed, the latter difference is little else but the difference between the truth that grass is the right thing to eat, and the truth that mutton is the right thing to eat. But the difference between the truth of a Hottentot and the truth of a St. Paul is almost infinite.

To return to our theorizers about parasites.

Dr. Tyndall tells us about a parasitic affection of the spleen, to which animals are subject, and which causes them, after much suffering, to die in great agony. It seems that a Dr. Kock, a German, has devoted a great part of his life to watching these little parasites through microscopes, with the view to establishing the germ theory of disease. After trying all sorts of fruitless experiments on live rabbits and guinea pigs, he at last thought of inoculating mice with the diseased blood, and found, to his unspeakable delight, that they all died in great agony within twenty or thirty hours of the operation. Now, we all must agree that this is a very delightful experiment ; but to infer from it, as Dr. Tyndall seems to do, that of the innumerable disorganizations of the human body that are followed by fever, each one is primarily caused by its own separate living parasitic organism, is surely about as unscientific a bit of guessing as we come across every day. A flea is a well-known and active little parasite, easily imparted from one person to another, and, when imparted, causing, not an agonizing death certainly, but still, considerable irritation. But to infer from this fact that every one of the innumerable forms of irritation to which the human body is subject, is caused by its own separate variety of flea, would surely require a lively, or (to say the least of it) an Irish imagination. Or, again, there is that distressing complaint, the common Scotch Fiddle, or itch. We are told by Dr. Bonomo that where this malady is present a small parasite can be easily discovered with the microscope. The little creature has six legs, two horns, and a pointed nose, and it moves about with great vivacity, and lays a great many eggs. Now, all this, perhaps, is true ; but to infer from it that every feverish attack is caused by an insect with six legs, two horns, and a pointed nose, would

surely be loose science. Indeed, Dr. Copland's sagacious comment is, that the experiments do not settle whether the parasite causes the itch or the itch causes the parasite.

Any sufficient injury to a tissue causes fever. A scald causes fever. A gun-shot wound causes fever. Famine causes typhus fever. Malaria (bad air) causes agues and low fevers. Are, then, minute living organisms the primary causes of fever in these cases? Dr. Tyndall would seem to infer so. "Shock to nerves," says Dr. F. Winslow, "may cause almost any disease." Dr. Maudesley mentions cases of surgical operation causing erysipelas, measles, scarlet fever, and small-pox. How about the little creatures in these cases being the primary causes? Dr. Tyndall's reasoning seems to be as follows:—

It is well known that any injury (as for instance a scald, a gun-shot wound, or breathing in sufficiency sewer gas) to any tissue or organ is followed by that kind of general weakness in the whole body, that is called "fever." But introducing minute living organisms into the spleen of a mouse causes fever. Therefore every variety of fever in men that follows upon injury to any tissue or organ is caused by minute living organisms. Rather a comic sort of syllogism this.

Here is another bit of reasoning.

Parasitic organisms that are visible with microscopes cause "itch" in men, and fever in mice. Therefore all the fevers of men are caused by parasitic organisms that are not visible with microscopes.

I remember when I was at College reading the following three syllogisms in "The Pluck Papers," a small publication attributed to Mr. Lowe when he was an Oxford undergraduate:—

- (1) All members of the University wear caps and gowns;

Some ladies wear caps and gowns ;
Therefore, some ladies are members of the
University.

(2) A man in a skiff has skulls in the water ;
Skulls contain brains ;
Therefore, a man in a skiff has water on the
brain.

The third is a sorites, or sort of prolonged and drawn-out syllogism.

(3) All young ladies are agreeable ;
All agreeable things are pleasant ;
All pleasure is uncertain ;
All uncertain things are vain ;
All vanity is good for nothing ;
Therefore, all young ladies are good for nothing.

I will add one more.

All Cheshire cheeses are yellow and round ;
The moon is yellow and round ;
Therefore, the moon is a Cheshire cheese.

Few things amuse me more than a muddled inference or a confused syllogism.

Many of the fevers in animals correspond to fevers in men. If a horse is kept in very foul stables he will be subjected to fever. If a horse is hunted hard with insufficient preparatory exercise he has an attack of fever which shows itself sometimes by swelled legs, sometimes by greasy and running heels (whence Jenner got his lymph for vaccination), sometimes by eruptions of spots on the legs (called by hunting men mud fever), sometimes by eruptions all over the body—in fact, the animal has equine small-pox. Now if a doctor told me that this horse's fever was caused by a minute germ that had come from another diseased horse, I should know at once with absolute certainty, from the long experience

I have had, that the man was a dolt, though I should not tell him so, for I do not like hurting people's feelings. On the contrary, I should tell him that his professional information was very interesting, ask him to luncheon for next day in order that he might impart to me some more of it, and carefully avoid for the rest of my life consulting him in cases of illness. And this would not be untrue civility, for to me follies and superstitions are always curious and interesting.





CHAPTER IX.

ABOUT SIR THOMAS WATSON, HIS NINE FEVERS, AND CONTAGION.

WHILST Professor Tyndall and his school seem to think that nearly every variety and shade of fever, even down to such a trivial affection as hay asthma, is caused primarily by its own special parasite, we must remember that other teachers tell us very different stories. For instance, Sir Thomas Watson says (in the May number of the "Nineteenth Century," 1877) that nine, and *only* nine, diseases are so called, namely, chicken-pox, hooping cough, measles, small-pox, scarlatina, typhus, typhoid, Oriental plague, and mumps. And their characteristics are—

- (1) Being febrile.
- (2) Running a definite course.
- (3) Being attended with distinctive marks.
- (4) Occurring only once in a lifetime.
- (5) Being taken only by contagion.

A hint or two about these characteristics.

- (1) Being febrile.

In slight attacks of some of these diseases no fever is discoverable. On the other hand, fever may follow any

injury to any tissue. Fever means general weakness, caused usually by injury or loss of healthy motion in some tissue or organ. Cutting the finger with a penknife will cause fever.

(2) Running a definite course.

There is very little truth in this. No two cases of fever ever run identically the same course, as Dr. Wendell Holmes truly says, and there are no hard lines between the different classes (so called) of fevers. I wonder where Sir Thomas draws the line between a feverish cold and chicken-pox. Where there are ten spots? or five? or one? or the appearance of a spot that can only be discovered with a powerful microscope? Running a definite course, Sir T. Watson seems to think, depends upon some quality in the entity he calls a disease; or to go farther back still, perhaps he thinks it depends upon some characteristic of the invisible parasite that he thinks causes the disease. But really it only means that the generality of men have the generality of constitutions, or they would not be the generality of men. Therefore, when some organ is inflamed and fever ensues they usually get well in pretty nearly the same time. But there is no rule. One man lingers long, another gets well soon, and another dies right off. The thing is mere confusion of mind between similarity in the constitutions of men, and some supposed quality in some supposed entity called cholera, or plague, or mumps, &c., &c. An attack of cholera sometimes kills in ten minutes from the beginning. How about "a definite course" in such cases?

(3) Being attended with distinctive marks on the body.

In slight attacks of some of these diseases there are no distinctive marks.

(4) Occurring only once in a lifetime.

This is absolutely untrue. I myself, though (not being a medical man) without experience, have known several persons have measles twice. Ignorant grooms and horse-doctors have the same superstition about the zymotic fever in horses, called distemper. But I have repeatedly known a colt have it twice, and even thrice.

A person has small-pox. He does not take it a second time. Sir Thomas concludes from this that having had it once protected him from having it again. When I was at school I broke my collar bone. I have never broken it again. If Sir Thomas is consistent, he must suppose that having broken it once protected me from breaking it again. However, he candidly confesses (and his confession destroys his whole case) that people often have any one of his nine zymotic diseases twice or even thrice.

This superstition about immunity is very common. "Small-pox," says Dr. Budd, "only occurs once in a lifetime, because the small-pox poison *cannot* grow again in a body in which it has once bred." Now, how an honest well-meaning man, as I doubt not Dr. Budd is, can make such an assertion as this, that almost every doctor in England knows by experience to be false, is wonderful. Of course a man does not like to acknowledge facts that destroy his pet dogmas, but Dr. Budd should take a lesson from Sir Thomas Watson, who honestly cuts his own throat and confesses outright that people often have small-pox twice and even thrice. One of the French kings had small-pox three times and then died of it.

Still, after all, there is *some* small foundation for this fancy about immunity. All human errors have some foundation. It is hardly in man to invent *de novo*. But he can add and exaggerate without limit. "Facile est

inventis addere." Even belief in witchcraft had some foundation. The evil eye of a malignant person was supposed to kill. But this belief was not absolutely groundless, inasmuch as malignity is undoubtedly a deadly thing. The belief was only an enormous exaggeration. A person's life would undoubtedly sooner come to an end if passed with miserable, morose, malignant, and cynical scoundrels, even if no bodily harm were done, than if passed with happy, unselfish, and angelic people. Selfishness actually kills. Unselfishness creates joy, and adds to life.

The idea of immunity for life from having had a disease once, seems to be partly a confused inference from certain experiments. We are told that there are one or two forms of disease with which if a person is *repeatedly* inoculated he becomes gradually as it were acclimatized to the abnormal influence, and ceases for a time to be liable to it. But if this is true it tells *against* the doctors and their theories. For the inoculation, to be of any use, has to be repeated very often. But the doctors tell us that vaccination *only once* done is a perfect safeguard; or having a disease *only once* is a perfect safeguard. As to the evil effects upon the constitution of the unnatural inoculation of a loathsome complaint nothing is said.

A certain immunity will perhaps sometimes be observed after an epidemic, but not what the doctors mean. A community we will suppose is subject to a new unwholesomeness, say the black death of the Middle Ages. Numbers die. The survivors do not during that epidemic take it again. Why? The doctors say, because a man *cannot* have the same disease twice. But this we know to be false. The true explanation is, (1) The weak ones being killed off. (2) Temporary

adaptability to new circumstances in the survivors. (3) The unwholesome influence ceasing. Send a horse accustomed to pure country air to a London stable, and he has a fever more or less severe, and perhaps dies. If he lives and continues in London he remains free from fever—not because he cannot have it twice, as the ignorant horse-doctor says, but because his constitution adapts itself for the time being to breathing ammonia instead of air. But take the horse into the country and then bring him back to London, he will be as liable to have an attack of fever as ever.

Some London stables can neither be imagined nor described. I once took two horses there; one was a black horse, the other was a white one. The day after I got to town I went to see how they were housed, and found them underground in a foul place, so dark that I could not tell which was the black one and which was the white one.

We now come to Sir Thomas Watson's fifth characteristic of his nine zymotic diseases, namely "being communicable *only* by contagion."

The question of contagion is in its infancy. High authorities deny that Oriental plague can be communicated by contagion. Some doctors say that cholera, consumption, and typhoid, are contagious, some that they are not. Few will deny contagion altogether, though many intelligent people have done so. In fact, nothing is settled, except that enormous exaggeration reigns upon the subject. "I am every day expecting," says Dr. Dickson, "to hear medical men calling broken legs contagious." If a twentieth part of what we are told about contagion were true, there would hardly be a doctor or nurse left alive in the country, and those that were would have to be shot down like mad dogs to prevent

their carrying contagion to everyone they talked to, shook hands with, or sat in the same carriage with. We hear a great deal about infected cabs, but what can they be to infected doctors? If their talk about the thing were true, it would be madness to speak to one. Indeed, if I believed in it, nothing on earth would induce me to let a doctor see or touch any child of mine, or at any rate without taking the most stringent precautions. I should give my butler positive orders not to let any medical man into my house till he had thoroughly disinfected him. I should put the man almost upon his oath, and question him most rigorously. "Have you washed his hands thoroughly with disinfecting fluid?" "Have you steeped his clothes in chloride of lime?" "Are you sure you have poured a sufficient quantity of Condyl's red permanganate of potash down him?" And even if I got satisfactory answers to these questions, I should still compel the child to breathe through a great thickness of cotton wool, so as to intercept all the terrible little parasitic organisms that in spite of disinfectants would still be certain to buzz round the doctor from his numerous patients. But the fact is, I utterly disbelieve in ninety-nine parts out of a hundred of what we are told about contagion and germs, and therefore whenever one of my children is unwell beyond a certain degree, I always get a doctor to it forthwith, without making my butler wash his hands, steep his clothes, or even pour any of Condyl's red permanganate of potash down him at all.

Sir Thomas Watson says, that his nine zymotic diseases are proved to arise solely by contagion. But here again he is candid enough to confess that vast numbers of cases arise where it is impossible to trace contagion. Where then is the proof? The "onus

"probandi" rests with him; the natural presumption, according to his own showing, being on the other side. In his next article he ought to take a leaf out of the cattle-doctors' books when they were at their wit's end to prove that rinderpest only came by contagion. They said that dogs carried the contagium, that cats carried it, that birds carried it, that inspectors carried it, that insects carried it, that the wind carried it, and that the only way to be safe was to tie up the dogs, kill the cats, shoot the birds, disinfect the inspectors, shelter the beasts from all winds, and protect them from insects by mosquito curtains.

This is how the cattle-doctors proved to the British public that rinderpest (or murrain to use the old word) can only come by contagion. But if such idle assertions and guesses are called proofs, anybody could prove equally well that stomach-ache comes solely from contagion. By the way, why should not the doctors try this on? I am sure the public shows itself very docile and teachable.

The arguments of the doctors to prove that small-pox can only be taken by contagion are, I say, not one whit less imbecile than those the cattle-doctors made use of to prove that murrains amongst cattle can only be taken by contagion. By the way, I wonder why they adopted the new word, "rinderpest," instead of using the old word, "murrain." Our "Vets." are not generally highly educated, so I suppose it arose from ignorance of history. We learn from old records that murrains among cattle, quite as fatal as the last one, have recurred amongst us every fifty or a hundred years, as far back as records exist. The first we read of was in Ireland, in the reign of King Bodhibhadh. It was so fatal, that only one bull and one heifer survived in the whole country. The date of this invasion of rinderpest was the year of our Lord 36.

Rinderpest, we are told by the cattle doctors, is only taken by contagion from animals imported from Russia. Thus we come to the interesting fact, that in the year of our Lord 36, traffic in cattle was carried on between Russia and Ireland !! O, you poor cow-doctors, learn how to read books before you try to teach those who can !

Information about murrains may be got from Dr. J. Parkins' book entitled "Epidemiology," an admirable work, full of facts, that must prove to any unbiassed person that the assertion that epidemics visit countries in consequence of contagion *alone* has not a leg to stand on. Still, this is the superstition just now in fashion. What effect general education may have some day no one can tell, but hitherto every age has had its own superstitions—the present one, perhaps, as much as any.

All living creatures in all countries are subject to occasional hurtful and destructive influences, about which nothing whatever is known. Hornsea mere, a lake of about four hundred acres, belongs to me. Twice in my lifetime I have known a "murrain" amongst the pike, when large numbers of dead ones were found floating on the surface ; and for the next few years no pike could be caught, for there were none to catch. I wonder whether our animal-doctors would tell me that they had taken the disease by contagion, in consequence of germs having been carried by birds from diseased fish in the steppes of Russia ? At any rate, if they did, I should not be the least surprised.

It was very amusing how each country charged some other country with originating and spreading rinderpest. Whilst the Danes called it an English disease, and the English called it a Russian disease, Professor Jessen, the Russian veterinary surgeon who attended a European Congress of cattle doctors at Vienna, denied *in toto* that

there was the smallest particle of truth in the statement that his country was the birthplace of the murrain. It was like schoolboys : "Please, sir, I didn't do it, sir ; he did it, sir, please sir !" But the motive, of course, was different. The cattle doctors accused other countries, not because they did not want to be flogged, but because they did want to get Government inspectorships. And no doubt they did this quite honestly, such is the force of bias produced by pecuniary considerations.

To mankind some districts, like the Pontine Marshes, are always pestiferous, others only occasionally so—when come epidemics of plague, or cholera, or yellow fever, or influenza, or typhus, or boils, or black death, or ague, &c., &c., *ad infinitum*. But, as yet, science has discovered scarcely any certain knowledge as to the causes of the diseases, though guesses are innumerable. A few undoubted facts are observed, such as the extremely beneficial effect of cleanliness, purity, good air, and good habits, and also that, for the most part, but not always, people are safer on high and dry than on low and wet ground ; but beyond a few facts of this sort we have no knowledge. Also why epidemics take different forms at different times, is an utter mystery. Nothing is known about it. But our third-class scientist, who is usually a shallow and conceited person, abhors to say, "I don't know," or "I don't understand," so he makes all sorts of guesses, such as witchcraft, or bacteria, or fungoid germs, or lunar influences, or want of ozone in the air. Each one calls his own guess knowledge, and thinks he understands something when he understands nothing ; and then his funny little third-class soul seems satisfied.

I do not blame the doctors for guessing, for the only way to reach a true guess is by many false ones ; but I

do blame them for each telling the public that his guess is proved knowledge, whilst all the others are delusions. Of course, it is human nature for a man to love his own intellectual offspring, rickety as it may be. Still, however much human nature there may be in a man, he should try to avoid telling lies.

In 1867 Winterton, in Lincolnshire, suffered from typhus fever. Mr. Simon, a medical inspector, examined into the matter, said the drainage of the village was bad, and called, and no doubt believed this to be a complete explanation. But his explanation was a mere guess, that explained nothing whatever ; for the drainage of almost every village in the country was still worse, and yet they were free from the complaint.

Every age, I say, has its own superstitions and delusions. In the fourteenth century black death raged. The people did not know the cause of it, so they said the Jews poisoned the wells, burnt 2000 of them alive at Strasbourg, and put to death 18,000 at Mayence, to say nothing of massacres in other places. Ten years ago rinderpest raged in England. The people did not know what produced it, so they said contagion was the cause—that is to say, imaginary germs of imaginary parasites from imaginary animals in Russia—so they slaughtered and buried ten feet deep 56,446 *healthy* cattle, to say nothing of thousands that would have got well if left alone in the open fields, with pure air, good food, and no ignorant cattle doctor. All this useless and absurd slaughter Dr. Parkins justly calls “a sacrifice to the veterinarian Moloch.”

The quarantine arrangements against cattle plague were of little or no use. During the murrain I tried in vain to infect my cows in the way we were all told it was spread, though of course I felt quite sure beforehand

that I should not succeed. I read that in 1877 a member of the West of England Counties Association offered to give cattle-doctors a hundred pounds if they succeeded in communicating any one of the so-called contagious diseases to some beasts, without actual contact with diseased ones. But the learned men were wise in their generation, and declined the offer.

During the last cattle plague a rigid quarantine was established in Aberdeenshire, and all suspected cattle slaughtered, till at last the rinderpest was stamped out, and the county was pronounced healthy. But one day the murrain appeared again. "Oh, but," said the cattle-doctors, "an inspector, forgetting to change his coat, carried the germs." So again it was stamped out, cattle slaughtered, and again the county was pronounced healthy. In a week or two it was as bad again as ever. This time it was a dog that carried the germs. Five times did the disease reappear after it had been "stamped out"; and so things might have been going on now, only at last the murrain ceased, as all murrains do sooner or later. Nevertheless, Mr. Gamgee quoted Aberdeenshire as showing the success of the stamping-out system; and when the repeated reappearance of the murrain was mentioned, he said *this only showed how useless is any system limited to one county*, which rapid transition of argument, to account for the second assertion, which contradicted the first, has ever since been a great delight to me whenever I think of it. It was so like the proverbial schoolboy :—

"I say, Dick, lend me your knife."

"I can't; I havn't got one. Besides, I want it myself."

Dr. Parkins shows how futile are all quarantines and contrivances to keep out the supposed contagions caused by the imaginary germs of imaginary parasites. During

the cattle plague, Prussia carried these precautions out with the utmost stringency, by the aid of soldiers, as only a despotic military Government could do, and yet the murrain always broke out just the same.

Rinderpest breaks out in Prussia. The medicine men are consulted. Then come edicts that the boundaries of districts still healthy be rigorously defended by soldiers, so that no "contagium" can possibly enter—that transit of cattle and farm produce be put a stop to—quarantine stations provided—intercourse with the external world prohibited—churches, schools, and public houses closed—cattle-doctors put in quarantine, and made to receive what they want at the end of long poles—dogs tied up—cats shot—poultry and pigeons shut up—hands washed with vinegar, and clothes fumigated with chlorine gas—and, when all these instructions have been carried out to the letter for three weeks, the rinderpest breaks out within the charmed circle, just the same as if nothing whatever had been done to prevent it. But the wise men are always up to the occasion, and prove that an inspector forgot to wash his hands, or a pigeon flew across the boundary, or a dog got loose, or a cat came to life again. Some such statement always accounts for the outbreak, and then the farce begins again. In fact, they might just as well try to keep the frost of winter out of a country, by means of soldiers and sanitary regulations, like the illustrious Asiatic potentate who, many thousand years ago, ruled over an extensive region so far south that frost was all but an unknown thing.

One morning consternation reigned in the palace. His imperial majesty had risen from his couch with his finger ends tingling with what we call "cold," though the people of that country had no word for it. The chief medicine man (an experienced and very learned person) being

summoned, saw at once what was the matter, and said, "If your imperial highness will blow upon your imperial highness's fingers, the painful sensation will be allayed." But the case was a worse one than he thought; for the pain was not allayed. At once the emperor had his head cut off, and another medicine man fetched, who, when the symptoms had been explained to him, said, "If your imperial highness will put your imperial highness's fingers into your imperial highness's mouth, the pain will be undoubtedly allayed." The emperor followed the instructions, this time with success.

The sun shone out, and the cold was turned to warmth, but the emperor did not forget his sufferings. So he gathered together the most illustrious medicine men in his empire, and consulted them about the best way to keep out such visitations for the future. Five years did these learned men devote to the subject, and then they drew up a report extending over many thousand pages. I need not here repeat all the contents of these pages, but the upshot was that the emperor's sufferings had been caused by an evil spirit that visited the country early in the morning once every forty or fifty years. Then they went on to say that if sentinels stationed ten miles apart along the boundary were to beat tom-toms for two hours every morning, the evil spirit would be kept away, and the country would be safe. The emperor at once acted on the report. Sentinels were placed, the tom-toms were beaten, and then came the greatest degree of frost that had ever before been experienced, some people even asserting that water had actually become hard and brittle; but this was so manifestly impossible that nobody with a grain of sense believed it. Fortunately, the whole thing was completely explained. One of the soldiers had fallen asleep at his post. How-

ever, it took a very short time to cut him into small pieces and put another man in his place, and then the tom-toms sounded as before around the land. Still, every forty or fifty years the cold reappeared the same as ever, and some circumstance was each time discovered that satisfactorily accounted for it. So things went on for many hundreds of years, and would no doubt have been going on now, only some hordes of Tartars invaded the country, and cleared away the nation of fools from off the face of the earth—emperor, medicine men, soldiers, tom-toms, and all.

Dr. Parkins proves by positive instances (1) that the cattle plague in very many cases sprang up spontaneously ; (2) that it has not spread to other cattle on the same farm, although none of the healthy animals were slaughtered ; (3) that the disease subsided without human intervention. And he goes on to infer that the disease generally arose spontaneously, that it always subsided spontaneously, and that the slaughter of diseased beasts and the restriction on the importation of cattle are mere folly. However, I suppose it is no use writing about the thing. Every dog has his day, and so has every folly, and unfortunately this particular folly has other props beyond its own merits or demerits. In the first place, farmers and squires like meat to be dear, and therefore do not object to a little protection, whatever name it goes by ; and in the second place, cattle-doctors naturally like Government inspectorships, and other little pickings. I suppose I should be just the same if I were a cattle-doctor.

Exaggerated ideas about contagion are sure to prevail so long as ignorant doctors, veterinary or otherwise, are listened to, and inspectorships provided for them on the ground of contagion being the *sole* cause of disease.

One evil of exaggeration is the panics which are so constantly leading to foolish legislation. If a terrified public demands ridiculous legislation, legislators must legislate ridiculously. And undoubtedly the last time murrain was amongst us the legislation was superlatively ridiculous. One day an old woman in a country village was removing her pig fifty yards off to a pig-sty at the other side of the road ; but just when she had got it half-way across, an inspector on his rounds came up, made her take it back again, and told her that she must get an order from a magistrate before the animal could be removed. So off she started for the nearest magistrate, who lived four miles off. But he was not at home, so she went three miles farther on to another. Here at last she got her order, and then trudged home again—fourteen miles altogether. But she had not had such a walk for years, so she just took to her bed, and was dead in a week. Whether the pig has ever got to the other side of the road I have not learnt.

Another day a man came to ask me, as a magistrate, if he might carry on his back a litter of pigs in a poke from one part of his farm to another, the inspector having told him he could not legally do so. Of course I immediately referred to the Act of Parliament and Orders in Council for "little pigs in pokes," but I searched in vain. The possibility of such a case had evidently not been contemplated, so I told the man he might carry as many little pigs about his farm as he liked. But whether I was right or whether the inspector was right, nobody knows, and nobody will know to the end of time.

There were innumerable absurd stories during the time of the murrain, all showing how panic in the public reacts on the law-makers and produces confused and ridiculous legislation. Stories, also, in proof of the

absurdity of the doctors' doctrine of contagion being the sole cause of the malignant forms of fever in cattle, are infinite in number.

Whilst rinderpest was raging, a relation of mine had eight cows. Four of them lived in the middle of the disease, whilst the other four were completely isolated from all possibility of contagion. But it was the last four that died of rinderpest. Not one of the first four took it.

I tried in vain to infect my milk-cows. But then they were living healthy, out-of-door lives, with plenty of good food, and they never went near a cow-house.

It is an established fact that amongst men over-crowding causes malignant fever in some form. But when an unhealthy season comes, and cattle in foul and over-crowded cow-houses get malignant fever, we say it comes from Russia, and dub it "rinderpest" instead of "murrain," the term that has been hitherto in use for the thing as long back as history goes. There is no such thing as an absolutely sweet cow-house. Famine, too, amongst mankind causes famine fever. Just so, bad keep in unhealthy seasons will lead to fever amongst beasts.

A large proportion of the deaths from rinderpest were really deaths from cattle-doctors. Shutting the animals up and nursing them was fatal to thousands.

The late Sir Tatton Sykes had a malignant fever, or what the horse-doctors call distemper, amongst fourteen yearlings. Eight he valued more than the others, so he shut them up and nursed them. These all died. The others he left out in the field. Not one of them died.

John Farrow, a farmer in Lincolnshire, shut up, nursed, and kept warm some beasts that had rinderpest. They all died. So he changed his treatment, and left twenty others in the open field. They all recovered except three. It was cold, frosty weather.

During the Crimean war some wounded soldiers had, luckily for them, to be left outside the crowded hospital for want of room. Of course they had plenty of blankets. In proportion to their numbers many more recovered than of those inside. In fever the first essential is pure air to breathe.

As I have said, the cattle-doctors in each country always trying to prove the malignant fevers to have originated in other countries, comes partly from the doctrine leading to inspectorships, quarantine appointments, and vast sums of public money going into veterinary pockets; and partly because pretending to account for a thing satisfies shallow and lazy minds, and most minds are shallow and lazy. People like thinking they understand things.

Perhaps after all there is nothing so very mysterious about the rinderpests or murrains. In 1799 the winter was extraordinarily warm and wet. Then came rinderpest. In 1865 the winter was again extraordinarily warm and wet, and again the murrain came. The winter of 1876 and 1877 was a very unusually warm and wet one, and in the spring that followed there were many cases of rinderpest in different parts of the country.

English travellers in Africa suffer most from fever in those parts of the country which are warmest and wettest.

The cause of fever, whether in man or beast, is often inexplicable. Still we know some things. We know that in unhealthy seasons famine, over-feeding, over-crowding, and bad air will all lead to malignant fevers. Fever means weakness, so any cause that lessens health must lead to it. To the above causes I myself doubt not contagion must be added, though many very intelligent people have maintained the contrary.

Amongst men, as amongst cattle, different epidemics take different forms. That is to say, seasons are unwholesome, or tell upon different organs and tissues in different ways. Sometimes unhealthiness of the season will cause small-pox, sometimes scarlet fever, sometimes boils, sometimes black death, sometimes sweating sickness, sometimes influenza, sometimes glandular swellings, &c., &c. The same unwholesomeness of season has been known to kill fish in the sea as well as animals and men on land. No two epidemics are exactly alike. In fact, nature never repeats herself exactly. No two grains even of sand on the sea-shore are exactly alike.

Our doctors are like the grooms. If anything is the matter with a horse, they say he got it by contagion, or as they express it, "he is smitten." A groom of mine once complained to me that all the horses he was riding had sore backs; so I told him to get the saddle stuffed. "Naw, naw, sir," he said, "it's not that, *they are smitten*." He thought one horse caught it from another. Of course it is no more use arguing in such cases than it is with the doctors about vaccination, so I told the groom that what he had told me was very curious, but still he must get the saddle stuffed; just as I tell the doctor that his information about vaccination is very interesting, and then take very good care to keep him and his putridities at a safe distance from my children's arms.

When a doctor tells us that small-pox only comes by contagion, he puts his intelligence below that of the ignorant groom. I say *below*, because the groom merely makes the assertion, but the doctors tell us that small-pox is *proved* never to come except by contagion, thus showing themselves unable to see, first, that a negative of this kind cannot be proved; secondly, that what proofs

there are, are on the other side. But doctors, happily, differ, and Dr. Murchison denies what Sir T. Watson writes his article to prove. Indeed, Sir Thomas's article is little else but a lot of old-fashioned notions that prevailed when he was a young man—when sanitary knowledge did not exist, and when doctors every year decimated the population by outrageous bleeding, blistering, and drugging.

Sir Thomas puts before us very clearly the terrible fatality of the zymotic fevers, and then what does he propose for remedies? Cleanliness? Good drainage? No over-crowding? Good ventilation? Escape from sewer emanations? Healthy, pure lives? Breathing good air? *There is not one word in favour of these things in the whole article.* There is not one word about the only measures that are of the slightest use. His sole remedies are enormous quantities of foul-smelling and disgusting disinfecting compounds, and vast armies of *State-paid* medical men to stamp out disease by destroying all possibility of the communication of the imaginary germs. Well, it is a very old story. More money into more medical pockets.

When Sir Thomas was a young man, doctors systematically pooh-poohed sanitary measures. The country is too enlightened now to stand this, so the older ones (who being old men, of course have not changed their opinions) put the thing into another form, and say that contagion *alone* is the cause of diseases—that their germs are everywhere—that passing a person in the street, even without touching, will impart them, and that dogs, cats, birds, letters, &c., will carry them; the necessary inference of course being that cleanliness, good lives, and all such provisions against disease are useless. Indeed, much of Sir T. Watson's article is given up to quoting instances

of people living a long time in the greatest filth with complete impunity ; and he quotes the jail fevers that used to be so common before cleaning jails was invented, and actually tells us that this jail fever was " never engendered by filth or defective ventilation." Sir Thomas Watson's moral seems to be, " They that be filthy, let them be filthy still."

After all, I suppose Sir Thomas is but a mouthpiece of the doctors, inasmuch as his article in " The Nineteenth Century," with all this pernicious rubbish in it, has been praised by almost every medical journal in England ; and this I call a disgraceful fact. A poor old man writes an essay that cannot fail to be an encouragement to uncleanness and impure lives, and because he upholds some superstitions that are in fashion, and advocates the outpouring of public money into medical pockets, these wretched journals have nothing but praise to give it.

Doctors before they write books should study logic. In only one page of Sir T. Watson's article I count six dogmatic statements of what he calls facts, each one of which is from the nature of the case unverifiable, and one or two of which I know by personal experience to be untrue.

We have seen how Sir Thomas tries to destroy the arguments of his opponents about the non-recurrence of a complaint in the same person, and ends with destroying his own, by confessing that the same person constantly has the same disease twice, and even thrice. Again, we have seen how he tries to destroy the arguments of his opponents about contagion, and ends with destroying his own, by confessing that in by far the majority of cases no source of contagion is discoverable, even quoting Dr. Gregory's statement, that of the small-pox cases received into the hospital not one in twenty could be referred to

any known source of infection ; and the poor dear old man evidently cannot see that this throws the whole burden of proof upon those who teach the doctrine of contagion, and contagion *alone*, the natural inference being on the other side. In fact, his quotation from Dr. Gregory is fatal to himself. Endeavouring to attack the enemy, his facts tell against his own side, and it is himself and his partisans he really brings to grief. Like Charley Napier, he blows up his own ship.

Charley Napier, when a lieutenant, undertook to blow up a French ship with torpedoes that went by clock-work. But the night was dark, and he could not find her. At length, after pulling about for an hour, he reached a vessel with lofty sides, screwed his torpedo into her side, wound it up, and had just retired to a safe distance, when a voice from the ship's deck shouted out, "D—n you, Napier, haven't you gone yet? What are you waiting for?" Then he found out, that instead of the Frenchman, he was blowing up his own ship. However, it was too late to do anything, for, before he had quite realized the situation, a tremendous explosion took place. Fortunately, torpedoes were more harmless in those days than they are in these, so it merely made a hole, which was soon filled up again. But Sir Thomas blows up himself and his partisans so thoroughly, that repair is hopeless.

I am sorry to speak so disrespectfully of the writings of an old man of eighty-six, who, I doubt not, is excellent as he can be. But I must tell the truth, and I do think his article, teaching as it does the uselessness of purity, wholesome lives, temperance, and sanitary measures, the most mischievous twenty pages I ever read. On the other hand, I hope, when I am eighty-six (if I live as long), I shall be in as full possession of my

faculties as Sir Thomas evidently is, and able to write as well (putting the truth, wisdom, and logic aside), as clearly, and as vigorously as he does.

I say that torpedoes fifty years ago were more harmless than they are now, but even now they seem not so dangerous as no doubt they will be before long. There was an account not long since of a fruitless attempt to blow up a sunken ship in the Channel with them, and even when they do take effect, they seem rather unmanageable, and as likely to blow up the wrong ship as the right one. I think it was at Malta that some torpedo experiments were being tried, nearly three years ago, upon an old hull ; but the explosion unfortunately took effect upon a Dutch brig that was anchored near. The commander of the torpedo experimentalizations was of course much shocked, and immediately sent a boat with an apology. But the Dutch captain had already sent an apology for being in the way. The two boats seem to have crossed each other. Curious to relate, the same Dutch captain, a year or two afterwards, happened to be anchored in the Sea of Marmora, near the English fleet, when an earthquake took place, which shook all the ships in such a way that the Dutchman, with his Malta experience in his mind, naturally concluded that the English were practising with torpedoes again ; whereupon he sent a civil message to the English admiral to beg that in future, notice of these doings might be given him long enough beforehand to enable him to remove to a safe distance.

Whatever the torpedo of the future may come to, it has not (perhaps from want of opportunity) come to much yet in actual warfare. I know that at the beginning of the late war the destruction of a Turkish ship by a torpedo was reported, but I dare say the crew were all sitting cross-legged down below, smoking chibouques, and

trusting in Allah to keep a look-out from the masthead, and if so, the case does not prove much.

To return to the doctor's pet maxim, "Omnia contagio." A man has small-pox. No contagion can be traced. "Oh, but," says some brilliant doctor, "the 'contagium' will remain latent in the system a long time. This unfortunate man may have passed near some house within the last year or two that contained a small-pox patient." Such are the shuffles resorted to even by respectable members of the medical profession to back up their ridiculous superstitions. "The doctors," said Cobbett, "always have a shuffle left."

Sir Thomas Watson only attempts one argument in proof of contagion *alone* being the cause of small-pox. It is this. Now and then a case of small-pox occurs, which seems at first to be spontaneous, whereas afterwards some possible source of contagion is discovered; therefore (this is his inference), therefore all cases that appear spontaneous are really caused by contagion. But this is the same as saying, that whereas Wednesday has now and then been mistaken for some other day, therefore, all days are really Wednesday. Such logic might be pardonable in a child of five years old, but Sir Thomas is more than five years old.

Doctors are crazy about contagion.

Sir Thomas has written another article telling us, that a dog never goes mad except by contagion. Then, how did the first case arise? There *must* have been one. And say what these confused doctors may, this is *positive proof* that hydrophobia may arise spontaneously.

Then there is poor puzzle-headed Dr. or Mr. Budd. He says, like Sir Thomas, that small-pox is known sometimes to be taken by contagion, and *therefore* it is illogical to suppose it can be taken spontaneously. He might just

as well say, that a man is known sometimes to be knocked down by another person, and therefore it is illogical to suppose he can ever tumble down by himself.

Contagion being the *sole* cause of disease, is vaccination's chief prop, so when vaccination has become a doctor's folly of the past, like inoculation, powdered earth-worms, fried toads, charms, amulets, and witchcraft, and when it will therefore no longer require to be propped up by exaggerated statements about contagion, there will then be a chance of a little unbiased common sense being employed upon the thing; but I suppose not till then.

Dr. Budd allows that all the fevers must have arisen spontaneously once. But it seems to satisfy his mind to put this origin a long time back. But putting a puzzle out of sight does not solve it. An ostrich shoving its head into a bush, no longer sees its enemy, and so thinks there is none. The doctors putting their puzzle a long way back, no longer see it, and so think there is none. Where is the difference between the doctors and the ostrich?

Some doctors, however, are not like the ostrich. M. Troussseau says, as he is bound in logic to do, that inasmuch as small-pox and other forms of fever must have arisen spontaneously once, there is no reason they should not do so any number of times.

"To believe men," says Professor F. Newman, "who admit no cause of small-pox but contagion, is contemptible. Our physicians seem to run mad about contagion, as if a person cannot become unhealthy by evil habits. How did small-pox *first* arise? Evidently not by transmission. Contagion is one cause of disease. It never can be the only cause. Impurity, in one form or another, must always be the commonest cause."

But just now the fashion is set the other way, and doctors believe either with Sir Thomas Watson that there are nine, and only nine, specific fevers, each caused by its own parasite, not one of them ever arising spontaneously, or with the school of Professor Tyndall, which seems to teach that no disease ever arises spontaneously, but that each one, even down to such a trivial affection as hay asthma, is caused by its own parasite, which parasite has descended from father to son from remote antiquity.

The opinion of these germ theorists seems to be, that each parasite was created many years ago, once for all, or to take one of them as an instance, that the minute organism that causes typhoid fever was created at the beginning of all things, and never since. Typhoid fever is a stomach disease, and we are informed, that just as the juice of the grape has its own ferment or breed of parasite that requires this particular juice for its very existence, so the stomach has also its own minute typhoid organism, which requires a stomach for its existence. But we are told that for millions of years after the lowest organisms were created there were no stomachs; and the typhoid fever parasite could not have waited for its own creation till stomachs were made, for that would have been spontaneous generation, which we are taught by Professor Tyndall is impossible. Thus we come to the following curious and interesting facts :—

- (1) That the minute typhoid parasite can only exist in or from a stomach.
- (2) That it lived on the earth millions of years before there were any stomachs.

Dr. L. Beale, laughing at these theorists about germs of cattle plague, says, "We are to imagine the disease-germs roaming about the Russian steppes without finding any cattle to infect."

Professor Tyndall tells us that hay asthma is caused

by germs of a minute living organism ; and yet, what is hay asthma or summer catarrh, as it is sometimes called? Summer catarrh means a chronic sensitiveness or slight inflammation of the mucous membrane of the eyes and air passages. It has nothing specially to do with hay, though the smell of it undoubtedly often brings on the sneezing fits. The Rev. Sydney Smith was subject to the complaint. He said that the least thing would cause an attack of sneezing—a scent, the smell of a stable, of a flower, a grain of dust, a ray of sunlight, a foolish remark, the sight of a Dissenter ; in fact, almost anything. Then, I suppose the sneezing that follows looking at a ray of light is caused by living disease-germs, or in the case of a clergyman of the Established Church, that the sneezing produced by the sight of a Dissenter is caused by them. By the way, talking of foolish remarks, if the Rev. Sydney had lived to hear Tyndall on asthma, I think it would have set him sneezing for the rest of his life.

Professor Virchow, the greatest authority on these subjects in Europe, utterly disbelieves in the fashionable germ theory of disease.

The way scientists (sometimes very intelligent men in their line) will think they account for difficulties by sending them back to former times is astounding. Saying that an unaccountable thing happened the day before yesterday, not only does not explain it, but it does nothing towards explaining it. But these former times the scientists talk about are nothing but the day before yesterday repeated a certain number of times. Then, how can this kind of explanation explain anything whatever?

We are told by our scientists that spontaneous generation never takes place ; that is to say, that no organism is ever created anew. We are also told by Sir Thomas Watson that there are exactly nine human zymotic

diseases, each caused by its own minute organism. We must conclude then, that the first man who ever lived, had plague, cholera, scarlatina, small-pox, typhus, hooping-cough, chicken-pox, measles, and mumps, at the time of his birth. Poor man!

Every fever with an eruption on the skin is caused by a germ of a parasite!! This is the doctrine in fashion.

"If the inflamed flesh of an over-driven ox," says Christoson, "be applied to a scratched finger, or even in some cases to unbroken skin, a dangerous and perhaps fatal inflammation will sometimes be excited, attended by general eruption." Now, what species of germ is here the culprit? Surely the doctors should give it a name. "The over-driven ox germ" sounds clumsy no doubt, but a clumsy name is better than none at all. Then again, when was it first created? Of course at the beginning of all things, or it must have been spontaneously generated, which we are told is impossible. Then at the beginning of all things, when the earth was just emerging from a state of burning mist, oxen must have been over-driven.

Now, I will try to give my readers a little common sense about fevers.

A scald inflames the skin, making it red like scarlatina, and causes general fever — fever meaning weakness. This fever or weakness causes the pulse to flutter quickly, like the flame of an expiring lamp, instead of beating strongly and steadily. Any injured tissue anywhere will cause general fever. Then comes some name according to the locality primarily affected.

"Rapid death from scarlatina," says Mr. Wolff (an eminent surgeon), "is precisely analogous to rapid death from scalding." I do not think our medicine men have yet attributed the latter to germs, but perhaps they will some day.

Mr. Wolff wrote an intelligent little book about the correlation of zymotic diseases, in which he maintained that the name of a disease did not depend on the particular breed of an imaginary parasite, but upon the part of the body which happened to be principally or primarily affected and inflamed—inflammation meaning loss of healthy, even motion in the parts affected, and thence irregular appearances, such as swelling, eruptions, &c.

Dr. L. Beale, who knows more about inflammations and fevers than anyone else, having devoted his life to studying them with the aid of powerful microscopes, tells us that the phenomena are microscopically the same whatever the locality of the inflammation, whether on the outside skin, from a scald, or small-pox, or scarlatina, &c., or whether it is on the inside skin, from sore throat, lung tubercles, typhoid eruption, &c., &c. Inflammation is inflammation—attended with general fever according to the degree of it—the only discoverable difference, as Dr. Beale says, being the locality of the inflammation. Why the inflammation is in one place during one epidemic, in another place during another, no one knows.

The universe, says the parasite or germ theory of disease, is full of germs that cause every species of zymotic fever, each fever having for its cause its own separate animal, vegetable, or fungoid minute organism. With regard to this theory, Mr. Wolff asks one or two pertinent questions :—(1) How did these little creatures first come into existence? (2) Where do they live during their periods of quiescence? (3) What starts them on their career of destruction? (4) Having started, what stops them? (5) Where was the cholera germ hiding before its outbreak in the delta of the Ganges?

The confusion of mind displayed by our medical

teachers is without limit. Every variety of disease, we are told by Dr. Farr and others, is caused by its own ferment or minute living organism. Again, Dr. Farr says that new diseases are continually springing up in the world. If then this is so, spontaneous generation of new kinds of germs of disease must be constantly taking place. But spontaneous generation, we are told by Professor Tyndall, is impossible.

Again, a doctor will tell us that each germ can only impart its own disease, and then, in the same breath, that doctors have been known to bring *puerperal fever* to women in consequence of coming from a *scarlet fever* or from an *erysipelas* patient. And Mr. Wolff gives us an instance of an *erysipelas* patient giving *erysipelas* to her father, low fever with sore throat to her sister, pneumonia to the nurse, and fatal croup to two children. What one may call a versatile germ, this!

The common trick of a partisan when a fact contradicts his pet theories is to deny its truth. But one side can play the trick as well as the other.

Why do we so often find highly intelligent medical men such bad logicians? There are perhaps several reasons. In the first place, exaggerated powers of observation are often found to be attended with deficient reasoning power. Symmetry of mind is rare. Too much *here* always means too little *there*. Again, many eminent medical men, especially amongst the older ones, are self-made men, who never received a really liberal or all-round education. No doubt they may have been abroad, and perhaps learned languages and studied foreign medical practice. Still, learning to speak French and to cut up live cats and dogs can hardly *by themselves* be called a liberal education, however valuable these acquirements may be as far as they go.

Sir Thomas Watson says that plague is *only* taken by contagion.

Sir John Bowring during his residence in the Levant convinced himself that the plague is not contagious out of the miasmatic locality. "I travelled," he says, "with a Greek doctor, who had tried in vain to inoculate himself with the disease. He told me that he and his assistants had carried on *post-mortem* examinations on hundreds of plague corpses, and there had been no instance of conveying infection. The Emperor of Russia sent many criminals to Egypt, who were compelled to sleep in the beds of plague patients, but not one caught the complaint. He gives many more instances. Sir J. Bowring, impressed with these facts, succeeded in obtaining less stringent quarantine regulations. On the whole, Sir John thinks the plague non-contagious, and perhaps he is right. Still, I should think that, like small-pox, it will be sometimes conveyed by contagion.

Though the ideas of doctors about contagion are nine-tenths false, few of them see the full significance of the one part that is true. Almost any grievance *may* be taken from another person through either bodily or mental sympathy—what has been called "nature's unconscious striving after oneness." The stone, striving after oneness with its mother earth, falls to the ground. Cold water, striving after oneness with hot water, mixes with it upon contact. "Inflammation," says Mr. Simon, "spreads to healthy tissue by contact just as healthy tissue will spread to and cure diseased tissue." "The contagiousness of health," says Dr. Ross, "is as manifest as the contagiousness of disease." Contagiousness is a universal principle. Contact with disease affects health; contact with health affects disease; contact with folly affects wisdom; contact with wisdom affects folly; con-

tact with virtue affects vice ; contact with vice affects virtue. Sympathy or striving after oneness is a universal principle of life, as repulsion and hatred or striving (conscious or unconscious) after separation and disintegration is a universal principle of death, doubt, analysis, and destruction. The plant strives upwards after oneness with the elements it assimilates from the atmosphere. Birds of a feather strive after oneness and flock together. The beasts of the field strive after oneness and feed alongside of each other. The British "navvy" gets drunk with his brother "navvy." Soul and soul strive unceasingly after oneness, each according to its kind, till at length we reach the higher forms of sympathy. "I," writes Madame de Sévigné, describing her daughter's headache, "I am just now suffering a terrible pain in my child's head." Dr. Tate, in 'Influence of Mind on Body,' tells us, amongst many similar stories, of a lady who saw a child's ankle crushed in a gate, and was laid up herself in consequence with inflammation in one of her own ankles. Some few choice souls forgetting self, rejoice with those that rejoice, and mourn with those that mourn ; and then we come to the highest degree of the principle ; that is, attaining oneness by bearing the burdens and sorrows of others, which manifestation the inhabitants of civilized countries (with the exception of the criminal classes and a few materialists) have agreed to call "divine." The godly man by the passion of pity, himself suffering, shares, bears, and thus lightens sorrow, at the same time that his happiness in doing so renders him unconscious of the pain, and his sorrow is lost in joy.

I know that many eminent scientists deny that a stone falls to the ground in consequence of any striving or desire to do so. But is their explanation of this wonder-

ful mystery more credible? They tell us that it falls because it is pushed behind by a great many atoms that fly up against it very fast. Why this takes place on one side of the stone and not on the other, they do not tell us, nor why the atoms fly about in this insane manner at all. Indeed, they cannot prove to us, and some deny that there are such things as ultimate atoms at all, useful as the hypothesis of ultimate atoms may be for the practical purposes of physical science as a peg to hang talk and ideas upon. On the other hand, many equally eminent men, such as Schopenhauer, Hartman, Weber, Herschel, Kirkman, James Hinton, &c., take what may be called a spiritual view of the gravitation force. Will, says Zollner, "is a universal function of matter and its cause." "The essence of force," says H. Weber, is "will." "Our consciousness of effort, will, and mind," says Sir John Herschel, "compels us to look on all force as (at bottom) an exertion of will and mind." "The five letters '*f, o, r, c, e,*'" says Mr. Kirkman, "spell 'will.'" Force is everywhere, and these men believe that its manifestations are manifestations of God dwelling in all things, and all things in God.

A scientist will perhaps say, that a stone cannot wish, for it has no brain to wish with. Well, a jelly-fish has no brain, but it wishes to take food and does take it. The lower we go in creation, the fewer the organs and the greater the homogeneity. A worm has no brain to wish with, and yet it wishes and gets what it wishes for. Well, but says the scientist again, the stone cannot have any life, for it always falls according to a uniform law of the inverse square of the distance. Well, a sheep always eats according to a uniform law of its being hungry, and a sheep is alive. As to "law," it is little else but a word to hide our ignorance; and as to uniformity of nature—

well, our teachers differ a little about it. "Father Newman," says Mr. Leslie Stephen, "shares with the empirical school (J. S. Mill, Bain, &c.), the doctrine that our belief in the uniformity of nature is an illogical conclusion of the understanding."

Our men of science, as I have said, have their little differences about the atoms, that, they say, push the stone behind. Some eminent men tell us there is only one kind of ultimate atom. Some equally eminent ones tell us that there are two kinds, namely, atoms of matter and atoms of the universal ether, and others equally eminent, like Boscovich, Kirkman, &c., or even more eminent, like Faraday, tell us that there are no such things as ultimate atoms at all.

Even the most enlightened doctors get confused about what they call the contagious diseases. Dr. Ross says, "By contagious diseases are meant not those diseases which exhibit contagious properties, for these properties are exhibited by nearly all inflammatory products. The contagious diseases are distinguished by being propagated *only* by contagion." But in the first place a negative of this kind could not, as I have said before, be proved, even if it were true, and in the second place it is not true, for there *must* have been a first case. There is no escape from this conclusion, except that of muddle-headedness, or worse. I say worse, for undoubtedly the doctrine of contagion *alone* is the peg on which hang enormous pecuniary profits to the medical profession from vaccination and inspectorship. But I really believe this "worse" is rare, that is, consciously, though unconscious bias is almost universal.

What our medicine men mean by contagion is not settled even amongst themselves. Of the different schools of doctors, each one has its dogma. One school

says, contagion comes from "bacteria;" another, from "fungi;" another, from "grafts;" another, from "gases;" whilst another calls it "mechanical," and another "chemical," &c., &c. But until they can agree, the public comes to the only true decision, namely, that nothing is decided. That is to say, nothing is known. Contagion, where it exists, may be something far more subtle than any one of these schools thinks. The poison of hydrophobia as well as many other frightful ones are quite incomprehensible. "Cancer," says Dr. Ross, "has been imparted to dogs." That is to say, it is communicable by contagion; but what is the contagium?

Napoleon died of hereditary cancer, inherited from his father. It may be said he took it by contagion from his father. A man, says the microscopist, is at the beginning of his life nothing but a minute particle of matter. This particle, even when magnified by a microscope that makes a cheese-mite look like a hippopotamus, is white, transparent, and completely without structure of any kind; and yet this minute particle of matter contains in the case of a Napoleon, the contagium (if anyone likes to call it so) of deadly cancer? But what is this contagium. Is it too the germ of a parasite?

Oh, you poor puzzle-pated medical theorizers and guessers, though you may learn much *about* diseases, how can you or anyone ever know what they are? Disease is negation of life in some form; but how can you know what this is if you do not know what life is; that is to say, if you do not know what that is of which the disease is the negation? And undoubtedly neither you nor anyone else will ever know what life means except in the sense of "knowing" meaning "being." Life may be known by living, but not by microscopes and not by analysis. To be in love is a form of life, and a very

active form, but the only way to know this form is to be in love. Some writer, I forget who, says that everybody is in a state of disease who is not in love. In other words, his state is a state of negation of life.

A frog and a Napoleon at the commencement of their lives are absolutely identical. And yet one of these has in it nothing but the becoming a tadpole with a tail, and then a frog, croaking and hopping till it is eaten up by a pike, and the other has in it energy, genius, vast practical ability, ambition, vanity, lies, and cancer. What is this "life" concealed in these two particles of transparent structureless matter? "No amount of magnifying power," says Dr. J. Morris, "reveals in the original particles of 'the matter of life' any structure, yet life, with all that word imports of terrible or beautiful, is concealed in it." "The crassest ignorance," he goes on to say, "and the highest science are on a level in its comprehension." Verily the works of God are wonderful and past finding out; and yet our materialists, out of the unfathomable shallowness of their hearts, say that men understand most things, and will understand all things! "Our ablest endeavours," says Professor Owen, "to penetrate the secrets of nature do but carry us a few steps onwards, and then leave us on the verge of a boundless ocean of unknown truth." "Pursuing material laws," says Herschel, "we find they open 'out vista after vista, which seem to lead onward to the point where the material blends with and is lost in the spiritual and intellectual.'" "Those things," says James Hinton, "of which our senses are cognizant, are but appearances indicating some deep and unknown existence."

The ideas of doctors are, I say, a mass of confusion on this subject of contagion. Just now it is the fashion amongst them to tell us that no "contagium" is gaseous.

It always consists, they say, of minute particles of matter, which particles are living, according to some of them, dead, according to others. But they also tell us that the aroma of violets and all scents and smells really are minute particles of matter that fill the air. But these latter are what are called in the English language gaseous. Then why are we not to call the former gaseous too? Our teachers are sadly indefinite about these things, and being indefinite nearly always means being confused.

All impartable diseases are imparted, say most of the doctors, by means of living germs of minute organisms. Cancer and consumption are hereditary, that is, imparted by ancestors to descendants. Then I suppose the minute particle of transparent and structureless matter of which each consumptive or cancerous person consists at the beginning of his life, contains germs of the cancer or consumption parasite? Well, I should not be surprised if we were told so. I have long ceased to be surprised at doctors' assertions.

There cannot be the least doubt that the minute particles in question do in a sense contain cancer and consumption. I say "in a sense" only, because what each of them contains is really not a something, but a want or a negation of something, that is to say, of life, which ends, as growth advances, in a want of life and of healthy motion in the lungs or in the locality affected by the cancer. A disease means a negation, not an entity—not a something, but the want of a something. Already some few wise doctors see this. In the Millennium, when all are wise, all will see it.

The teachings of Sir Thomas Watson and the doctors are founded on the superstition that every disease (so called) is a separate, clearly definable entity, instead of

the fact, that what is called a disease (say measles) is only a bundle of symptoms of negations of life tied up for convenience, and for convenience *only*—a wrong symptom getting into the wrong bundle being an every-day occurrence. All classifications, with hard lines between the classes, are false. “No hard line,” says Dr. Ross, “can be drawn between the zymotic and tubercular diseases; examine deep enough, and the distinction between the two ceases.” Mr. Villeman and Dr. Budd call tubercle a contagious zymotic disease. “No hard line,” says Dr. Ross again, “can be drawn between cancer and tumour.” “Descriptions,” says Dr. T. Tanner, “laid down in books are extraordinarily distinct compared with the medley of symptoms presented in real cases, and the various forms often run into each other.” “Great confusion,” says Dr. Morris, “arises from separating in classification slight or varied cases from severe ones, and calling them by different names, such as malignant purpuric fever, scarlet fever, or the slighter affections described for the most part as rubeola, with innumerable other modifications, but all taking place during a scarlatina and measles epidemic, and caused by the same poison.”

“There is,” again says Dr. J. Morris, “an imperceptible gradation from local to general inflammation and fever.”

“There is,” says Dr. Ross, “no distinct line of demarcation between health and disease. Zymotic disease means at bottom a low state of health from unfavourable conditions, such as bad ventilation. When the low health reaches a certain degree, some name, say typhus, is given, but the manifest feverish symptoms only indicate a difference of degree.” “The preliminary derangements,” says Dr. Beale, “are not sufficient to attract attention, but they exist none the less.”

Dr. Morris talks of the typhus group of fevers varying from black death and plague down to febricula. "Look," says he, "at scarlatina with its diphtheric and rheumatic variations—at cholera shading down to the slightest diarrhoea. How seldom is it acknowledged that the descriptions are but descriptions of types (that is ideas of the mind), and that round the umbra of each (so-called) disease is a broad penumbra continuous with that of other diseases." I myself have seen children marked from chicken-pox just like small-pox. In fact, the doctor who attended, confessed that the cases were not distinguishable from a slight attack of small-pox. Still he called it chicken-pox.

"Nature," says Emerson, "is intricate, overlapped, interweaved, and endless." Then he tells the following story: "I was hastening," he tells us, "to visit an old friend, who was, as I had been told, in a dying condition, when I met his physician, who accosted me in great spirits and with joy sparkling in his eye. 'And how,' said I, 'is my friend?' 'Oh!' he exclaimed, 'I have just left him. It is the most correct apoplexy I have ever seen. Face and hands livid, breathing stertorous, and all the symptoms perfect.' And then he rubbed his hands with delight, '*for we cannot find every day a case that agrees with the diagnoses of books.*'"

Now here is Emerson seeing truth (because he is a man of genius) that the majority of doctors (who, of course, are no more men of genius than the majority of any other class of men) cannot see; the truth, namely, that the classifications of diseases in books are only contrivances which, though convenient or even necessary, are false. There are no hard lines between the contiguous diseases (so called). "Nature," says Goethe, "carries on her own free sport without troubling herself with the classes marked out by limited men." The

average human intelligence seems indeed very limited ; in fact, it seems limited to the words it has invented.

The savage has only one name for all shades and varieties of fevers. Development brought distinctions, such as scarlet fever, typhus, small-pox. More development brought more distinctions, such as scarlatina, typhoid, diphtheria, rubeola. Then come subdivisions of divisions, such as cutting up small-pox into variola discreta, variola confluens, &c., &c. And so they may go on to thousands more shades and dovetailings, for nature is infinitely varied and complex. Now, the ordinary intelligence actually believes each name to represent a separate entity.

The way a name satisfies the human mind is very curious. What is this little round thing ? asks Tommy of his father. It is a pilula-chamomillæ-et-opii, my dear. And off runs Tommy perfectly satisfied, and thinking he knows all about it. What is this case of illness ? asks M.D. of his brother M.D. It is a case of scarlet fever, is the answer ; and home drives M.D. thinking he knows all about it. All about it, indeed ! Why, no two cases of illness were ever the same, and this man's case is different from any case that ever was before or will be again. Amongst innumerable other things it is modified, we will say, by some inherited constitutional peculiarity, caused originally by the gin-drinking of an ancestor two hundred years ago.

Nature is infinite in its gradations. But this Hegelian teaching of insensible gradation in nature seems as yet to be beyond the average human intelligence, though not beyond that of the wise. "What we call the faculties of the mind," says Mr. Bain, "are not, as most people seem to think, entities, but only classifications of mental manifestations, without truth, but convenient in practical life."

An eminent physician once told me that in fevers there were shades, varieties, dovetailings and complications innumerable, from a slight feverish cold up to that extreme and most malignant degree of the thing, Oriental plague.

"For a long time," says Dr. Ross, "gout was considered to be merely an affection of the great toe, but now it is known to be closely connected with bronchitis, dyspepsia, skin diseases, arterial degeneration, and other affections."

"Every practitioner," says A. Wolff, "has seen cases of zymotic disease which cannot be placed under any of the limited classes. *These we doctors dismiss from our minds as anomalous cases, and forget them.*"

Zymotic disease, beyond a certain point in severity, is usually more or less eruptive. Sometimes the eruption is on the skin outside the body, sometimes on the continuation of this same skin inside the body; sometimes it is in both. The name given depends mostly on the locality of the eruption. "The nature of the eruptive spot is," says Dr. L. Beale, "the same wherever it is and whatever the disease;" and he has microscopes that will magnify a house-fly to the size of an elephant. An eminent French physician calls typhoid disease "internal small-pox." "The eruption," says Dr. Budd, "of typhoid is just like the eruption of small-pox, except being inside instead of outside the body."

Now, all this is quite true. Still, it is undoubtedly convenient to classify and give different names according to the localities of the eruptions, disorganizations, and symptoms, though these eruptions and these symptoms never tie themselves down to the rules the doctors have laid down. Occasionally, indeed, this transgression is very marked, and then there is a terrible to

do. On such occasions the medicine men meet in consultation, and their perplexity is sometimes indescribably comic. "Look here," says Doctor A, "here's God Almighty been putting a symptom into the wrong bundle." Sometimes the conference ends in some new name being composed, such as "*rubeola maligna*"—a sort of half-way house between scarlatina and measles ; but more commonly they consider that nature has made a mistake, and that the thing had better be hushed up. Then they all make a point of forgetting all about it, and go on talking the old talk as if nothing had happened.

Doctors differ without limit, and fashions in medical doctrine and practice are nearly as capricious as fashions in dress. "We doctors," says Dr. L. Beale, "vacillate from one extreme to another and seem to work in recurring circles." Perhaps Sir Thomas Watson and his doctrines represent the height of fashion just at the present moment, namely, that there are nine, and only nine, zymotic diseases — nine actual well-defined and separate entities, like the two-and-seventy "well-defined and separate stinks" Coleridge counted in the town of Cologne. Here and there, as we have seen, some doctor, a little more courageous or a little more wise than his fellows, will hazard some heterodox opinions, such as the spontaneity of fevers as well as their contagiousness, or the imperceptible dovetailing of one kind into another ; but even these are uttered as it were in a whisper, as if they were half ashamed of themselves, like the reduced gentlewoman who had to cry muffins for her livelihood, but who took care to speak in a very low tone, so that nobody might hear her ; and all such heterodox utterances are soon swallowed up in the verbiage of orthodoxy. The doctors are like the theologians in the days of rampant Calvinism. Here and there a bold man would

venture to hint that perhaps the unbaptized infant might after all not be predestinated to suffer the eternity of torment so dear to the orthodox thought of the period. But such ideas were but as snow-flakes falling into an ocean of theological stupidity, "one moment white, then gone for ever."

Endless classifications is one way for men to manage their ideas. It is some time since I was at college, but I think this was Aristotle's way. Another way is to take two opposite poles, as for instance light and darkness, and then recognize that there are no hard classifications between them, but only insensible gradation. The former way has the advantage of being useful and the disadvantage of being false. The latter, though true, is inconvenient. A man has a fever with eruption on the skin. One doctor calls it measles, another scarlatina, and another rubeola; each absurdly thinking it an entity. Still the case is treated with more or less skill, and the man gets well. Another case of the same kind is attended by a man who can see truth, but is not very practical, and he pronounces the case to be one of the innumerable shades of zymotic disease (incapable of strict classification) between the two extremes of influenza and Oriental plague. What he says is quite true, only it cannot be acted on, and the patient dies.

Some day our medicine men will be wise enough *both* to see truth, and to use convenient classifications.

Poor old Sir Thomas Watson, with his nine, and only nine, specific diseases, is like the great Chinese philosopher, Fo-Fo, who lived 100,000 years ago, when the people (like all races sufficiently undeveloped) knew no colours but blue, red, and yellow. One day, Ching (a three-tailed mandarin) came to Fo-Fo in a state of great excitement, and said he had discovered a fourth colour, which

he proposed to call orange. But Fo-Fo said, "Pooh-pooh! what you call orange is nothing but red or yellow, for it certainly is not blue, and blue, red, and yellow are the only colours in the world." So the matter was settled; and it was not till 50,000 years afterwards that the Chinese discovered that shades and combinations of colours are infinite. I wonder how many thousand years it will be before our medicine men make the same discovery about disease. Still, as we have seen, there are glimpses even now. "It is very difficult," says Dr. J. Morris, "to say what should be called influenza and what should not." Of course it is, and sometimes impossible.

During a scarlet fever epidemic different people are differently affected. A will have the scarlatina rash on the skin, B will have a sore throat, but no rash, C will have only a feverish cold. All these three things are at such times confessedly caused by the same influence. But, says Sir Thomas Watson, in the rash case the influence is that of the scarlatina parasite. Then the other two must be caused by the same parasite; and yet the doctors who attend these cases say they are not cases of scarlatina. They call a disease specific, and another degree of the same disease not specific. Sewer gas gets into a house, and gives one person typhoid and another only diarrhoea. One they call specific, and not the other. But the cause of both has been the same—namely, sewer gas—so to call one specific and the other not so, can be nothing but confusion.

Men are such slaves to names, and hard lines between diseases (so-called) are so universally believed in, that I doubt whether the practitioner of the mere average type has sufficient intelligence even to understand the meaning of the statement, that what are called diseases graduate

into each other indefinitely and imperceptibly. In fact, the minds of men are, as Mr. Max Müller tells us, tied to the words they use, and seem unable to believe in the existence of anything that has not a name to it, whilst they think they know all about a thing immediately a name has been given it.

An illustration, to show our slavery to words :

Redness means the result of an objective reality, and a living subjective perception of it. Take away the latter, and the word "redness" has no meaning. Now, a set of excellent but confused persons called idealists, with the admirable and Irish Bishop Berkeley at the head of them, seeing clearly that if the idea of a perceiving mind be taken away, the word "redness" ceases to have any meaning, concluded that *nothing* would remain, and therefore that there is nothing in the universe but ideas. But because the word "redness" no longer avails, that does not mean that nothing remains, but only that the something that remains has never been christened, simply because men never want to talk about it under the circumstances. Yet this confusion has been the parent of whole libraries of idealistic writings and confused thought.

Some day our medicine men will see the *correlation* of zymotic diseases. A few do already. The American doctors believe that typhoid and ague come from the same source, namely, decaying vegetable matter. Some persons predisposed to it have typhoid, others shake. Dr. Murchison calls typhus a mild form of plague.

Amusing people, our medicine men! A child has a sore throat, with a little feverishness. It must have been sitting near an open window, says the doctor. In a day or two, one or two spots appear on the skin. This changes the whole state of the case. Now the open

window had nothing to do with it, but the child has got chicken-pox by a germ from somebody else who has it. But these new spots are only spots appearing on the skin outside, as well as on the skin of the throat inside. It is all one and the same skin. The one skin is only a continuation of the other skin. Then why should one of the spots be caused by an open window, and the other by a germ? No doubt, some doctors are consistent, and say that every inflammation, every cold, every sore throat, every touch of influenza, and the sneezing fits of hay asthma or summer catarrh, are each caused by its own specific living germ, and they laugh at the old ideas of atmospheric conditions having anything to do with the matter. By the way, I wonder how they explain what followed an unprecedented fall of the barometer a few years ago at St. Petersburg, when 30,000 of the inhabitants were within twenty-four hours laid up with influenza? Was all this from germs too?

About germs, and their exaggerated doctrines of contagion, doctors first delude themselves and then the public; and they delude themselves because (as I have said before) these doctrines put large sums of money into medical pockets. The force of unconscious bias is one of the giant forces of the world, and unconscious, I doubt not, the bias generally is. "Unnecessary surgical operations," says Dr. G. Wilkinson, "are constantly being performed *because they are lucrative.*" But I doubt not the surgeon nearly always conscientiously believes them to be necessary. But the bias acts as well as the conscience. Again, Dr. Wilkinson says that "each specialist teaches that his own class of disease is the disease of the day, like the cancer doctor or the mad doctor, who would put everyone under lock and key." This, no doubt, is partly because each specialism is its professor's

"one idea," and partly because it pays them, though they may not be conscious of either reason.

One thing is quite clear. If the germ theory of contagion is true, good-bye prevention. What good can possibly be done by disinfecting fluids, for instance, if the air we all breathe is full of germs of every sort of fever, diffused so universally that they may be taken into the system even at the tops of mountains, as I myself was told by an eminent medical man? Cholera, typhoid, and yellow fever, says Mr. Budd, infect the ground and water, and "the deadly germs of infusoria rise in swarms into the air." And then he tells us, like all the doctors, that the way to be safe is to use disinfecting fluids. The Americans have a phrase, "as big as all out of doors," so the doctors tell us to disinfect "all out of doors" with Condy's fluid! Good thing for Condy, at any rate. What is called in familiar language, "rather a large order."

History tells us that in some epidemics not only animals have suffered as well as men, but also fish in the sea have died, and been washed up in great numbers. I have not seen any explanation of this. Did some germs of the black-death bacteria find their way from men into the Atlantic, and then increase and multiply till the whole ocean was a mass of liquid poison? I suppose it was so. But why was not some "Condy" poured in? There must surely have been sad remissness somewhere. However, we shall know better next time, instructed as we have now been by Mr. Budd and Sir Thomas Watson.

"It is to be hoped," sagaciously observes Dr. J. Morris, "that disinfectants will not be allowed to take the place of open space and free air." But the hope is a vain hope. If men are taught to trust to the one, they are

certain to neglect the other. Oh, you foolish doctors, when will you learn that the way to be healthy is to lead pure, clean lives, and that the more men trust to foul-smelling liquids the less they will think of cleanliness ?

Some of what are called the disinfectant fluids are used in hospitals for dressing wounds. Very likely they are useful. Experience alone can show this. *How* they act so as to be beneficial is as yet only guess-work. For wounds in horses I have always used plain water dressings, or in some cases none at all, and I have hitherto been satisfied with the results. I have read that in America surgeons use dry earth dressings. What kind is best will perhaps some day be settled.

Theorists have actually accounted for contagion by saying that germs having escaped from some patient into a river, increased and multiplied, and poisoned those who drank the water. Of course it is better to drink good water than bad. Still the exaggerations about water infection are colossal. An epidemic breaks out. The doctor of the district is sent to ferret out the cause. Now, not one doctor out of ten can pronounce the words "I don't know," so the thing is soon cleared up. Generally the blame is thrown upon the parish pump ; but sometimes the infection is traced to milk. Some poor milkman is ruined, but that is nothing. The doctor's reputation remains intact, and the newspapers extol "the indefatigable perseverance of the medical men" who never rested till they had traced the germs of disease to their source. During the cholera epidemic of 1854, in a part of London near Golden Square, the parish pump being as usual accused, the handle was taken off. But the cholera paid no attention whatever to the removal of the handle, and at once carried off 114 people in

the parish quicker even than before. The fact is, we know little about epidemics except that the cleaner people are, the purer the air they breathe, and the healthier lives they lead, the safer they are.

Shallow people are apt to believe in only what they can see. Now they can see dirty water but not dirty air. A savage cannot see dirty air, so when taken ill he burns a witch for having bewitched him and caused his fever. He can see the witch. A modern doctor cannot see dirty air, so he wages war with the pump. He can see the pump.

"I know," says Mr. Rawlinson, C.B., "so many facts proving that what is termed bad water has little to do with local disease that I have ceased to care much what the analyzing chemists tell me, because if only one-tenth of what is said about water were true, there would not be a human being left alive on the face of the earth. I spend my life teaching sanitary doctrine, and I could give chapter and verse in proof of my opinions over and over again."

Drs. L. Beale, Wolff, and Richardson seem to agree that the fungoid and bacterian germ theories of disease are without truth. Perhaps the causes of fevers are too subtle to be discovered. There are other theories, such as poisonous gases, decayed vegetable matter, the graft principle, and catalysis; but whichever one may be true, except the germ theory, the moral is the same, namely, that people should be clean. But if the very dust of the air we all breathe is full of deadly germs, it must be hopeless, as Dr. L. Beale truly says, to attempt to protect ourselves.

Many persons, says Dr. L. Beale, have adopted the strange notion that dust is made up of disease germs.

Indeed, Professor Tyndall seems to think the air is always full of them. Dust falls if the air is still. Any-one knows this who has ever opened a cupboard and observed the dust on the shelf. And yet Professor Tyndall thought it necessary a few years ago to explain the fact in several columns of "The Times," and he certainly succeeded in demonstrating with the utmost clearness that, to use Dr. L. Beale's words, "particles of matter even when minute will fall until they reach some place which prevents them falling further, and the great discovery was announced that ponderable bodies are ponderable."

Professor Tyndall is like Sydney Smith's Frenchman, who was always explaining matters that wanted no explanation, as, for instance, what he did when his coffee was not sweet enough : "Ecoutez, monsieur, je vais vous expliquer cela ;" and then he would go on to show, with an admirable choice of words and much appropriate gesticulation, that his expedient under the circumstances was to put in "un très-petit morceau de sucre, voila !" But then, like the Frenchman, the Professor makes his explanations very clearly and very well.

I say that the causes of fevers and epidemics are perhaps too subtle to be understood. But our third-class scientist disbelieves in subtle causes. He hates the very idea of an incomprehensible cause that he cannot grasp with his little mind, or see with a microscope. "Show me a thing and I will believe it." "Material substance is everything." "Matter contains the promise and potency of all possible life." In fact the man who devotes his whole thoughts to "matter" is always saying, as indeed we all do about our hobbies, "There is nothing like leather." Thus it comes to pass that doctors,

leaning as they proverbially do to materialism, tend to dwell on the substantial materiality of all causes of disease. Calling them gaseous is even too ethereal for them, and to give a hint that good or bad health has anything to do with mental and spiritual influences is only to bring about a hint that you are a born fool.

Shallow doctors disbelieve in spiritual causes, and also in spontaneity. So they say, that some diseases are only taken by contagion, and others, like cancer, only by inheritance. But Sir Astley Cooper, who was not a shallow doctor, says, that cancer is caused mostly by mental distress. And, no doubt, emotion is a most powerful agent for both causing and curing disease. But emotion cannot be put under the head of "germs," "atoms," or "ozone," nor can it be weighed, measured, or seen with a microscope, so our medicine men ignore it for the most part.

We are told by the germists that cholera is caused by the multiplication within the patient of fungoid parasites. A man in perfect health is sometimes struck with cholera, and dead in ten minutes. How about the cholera parasite in such cases? Prolific little creatures at any rate they must be, with great capacity for reaching puberty early in life. I wonder how many generations succeed each other during these ten minutes! A great many, of course, or they could not kill their victim.

In an account of cholera in India we read that at Runderpoor the attacks were so sudden, that people were seen tumbling over each other in the public streets, as if struck by lightning. "During the black death," says Hecker, "many were apparently struck dead on the spot." "To talk," says Dr. Parkin, "of the disease in these cases being produced by the multiplication in the bodies of the

patients of living entities and germs, or by contagion, is an absurdity."

Accounting for fevers by germs is not science; it is mere confused guesswork. "The nature of infectious matter," says the report of the Royal Commissioners (composed of doctors), "is not yet discovered, but it is living, prolific, germinal matter, so minute, that its particles are less than the one hundred-thousandth of an inch in diameter." Then, the nature of infectious matter *is* discovered. Now, which do they mean, or do they mean both, or do they mean neither? No doubt they do not know which they mean, but, of course, the first assertion is true, and the second a guess. But how like it is to the guesses about disease in the old witchcraft days! We read in the "Hexenhammer," a witch book, published in 1489, first, that the causes of murrains amongst cattle cannot be discovered; secondly, that they are brought about by magic ointments, which the devil teaches witches to make for the destruction of cattle. Thus, the "Hexenhammer" tells us just like the Royal Commissioners, that the causes of murrains are discovered, and that they are not discovered. "We laugh," says Dr. Parkin, "at such ignorant crudities as *these* explanations, when we meet them in the writings of the Middle Ages, and yet we are called upon to accept them as truth in the nineteenth century."

Well may Mr. Wolff ask, "How can the germ theory account for the sudden deaths from cholera? How can it account for the undisputed fact of epidemics being most severe at their commencement? How can it account for their ever ceasing at all?" The doctors virtually say in the same breath, that germs of cholera cause the disease, and that the more these germs increase and multiply, the more does the epidemic die out, till at last

it ceases. With regard to zymotic diseases being caused by decaying organic matter, there is no such difficulty. In an unhealthy season its influence would naturally be greater at first, and then gradually diminish. But the germists pooh-pooh decaying matter and dirt. Mr. Budd, writing in the parasite interest, demonstrates in the most charming manner, that pools of foul water, manure-heaps, open cesspools, and stagnant wet places full of decaying matter, are perfectly harmless, and he especially points to the horrible state of the Thames a few years ago, and the stenches so foul, that they drove the members out of the Houses of Parliament, and broke up the law courts; thus hinting that the five million pounds spent in purifying the river was so much money thrown away. In fact, like Sir Thomas Watson, his motto seems to be, "They that be filthy, let them be filthy still." Why, the very children in a village school know better than this in these days. In 1845, M. Ançelon stated before the French Academy of Sciences, that in the commune of Guermange, in Lorraine, fever formerly made its appearance every year. At length a stagnant pond was drained off, and the fever never appeared again. Similar instances might be quoted by hundreds.

Cholera, says Sir T. Watson, is only taken by contagion. It never arises spontaneously. Cholera, say *all* the physicians of the cholera hospitals of Calcutta for the last fifty years, is a thing not communicable to those around the patient. This fact we are told by Dr. Bryden. Dr. Farr mentions isolated cases of real Asiatic cholera, one at Willesden, the other at Rillington. Such cases, he says, are inexplicable by those who deny the spontaneous origin of cholera.

I will enumerate a few of the theories about fevers, placing them in the order of probability as it seems to

me from the evidence; beginning with the most and finishing with the least probable of them.

- (1) The septic or catalytic theory.
- (2) Dr. L. Beale's theory.
- (3) The drug theory.
- (4) The antozone theory.
- (5) The sun-spot theory.
- (6) The lunar theory.
- (7) The earthquake theory.
- (8) The witchcraft theory.
- (9) The parasite or germ theory.

A few more words about these theories.

(1) The septic or catalytic theory.

According to this theory, zymotic fever comes from particles of dead or decaying matter imparting its deadliness to living tissue, not by self-multiplication, but by catalytic action and mere contact. Any person may start any disease in himself *de novo*; all that is necessary being the partial death by some means of some secretion or lymph, which thus becomes deleterious. Anything that strongly affects nerves may originate any disease by paralyzing some secretion; also any continued unwholesome influence, like breathing bad air. Maladies like ague arise from particles of decaying vegetable matter being taken into the system from wet land. Particles that come from a diseased person will occasionally impart any disease from a common cold upwards. Dr. Richardson, after explaining this theory, says of the germ theory that it is "the wildest theory and most distant from the phenomena it attempts to explain that ever entered into the mind of man to conceive." Indeed, one would think it had been invented for the purpose of fostering disease, for as Dr. Richardson truly says, "if the air around is

charged with innumerable and invisible germs which come from we know not where, and which have unlimited power to fertilize, what hope is there is for the skill of man to overcome the hidden foes."

Dr. Ross propounds what he calls the graft theory of disease, but it seems not very different from the septic theory. The expression is an old one. Lady Mary Wortley Montague, in 1717, describing the Turkish system of inoculation for small-pox, calls it "grafting," which she says was the term used by the people of the country. Liebig seems to have believed in the septic theory.

(2.) Dr. L. Beale's theory.

This, like the last, is totally opposed to the germ theory. According to Dr. Beale any disease may arise *de novo* in any person, and contagion means diseased particles passing from a diseased person to a healthy one, and there multiplying. Dr. Beale's theory is not far removed from that of Dr. Richardson.

(3.) The drug theory.

This theory holds that fevers are caused by poisons that act not by multiplication of germs or particles, but like the poisons commonly called drugs or medicines, and the deadly gases.

(4.) The antozone theory.

According to this theory all fevers come from want of ozone in the air.

(5.) The sun-spot theory.

According to this theory all fevers are caused by spots on the sun.

(6.) The lunar theory.

According to this theory all fevers are caused by lunar influences.

(7.) The earthquake theory.

According to this theory all fevers are caused by earthquakes. The earth opens and lets out from its inside noxious gases.

(8.) The witchcraft theory.

According to this theory all fevers are caused by witches, assisted by the devil.

(9.) The germ theory.

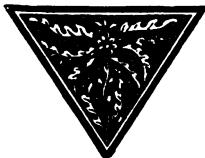
According to this theory fevers (how many of them depend on the particular fancy of each particular doctor who holds it) are caused each of them by a germ of its own specific breed of parasite (animal, vegetable, or fungoid), which germ may be encountered anywhere and everywhere, and is so small that nobody has even seen one, though many eminent men of science pass much of their lives looking for him through microscopes so powerful that they make a cheese-mite look like a hippopotamus.

I have put the germ theory last, because I (as one of the public who have to decide upon the evidence of opposition scientific experts), having carefully weighed all the evidence, decide that it has the fewest legs to stand upon of any of the theories, and, in fact, that it is, as the celebrated Dr. Beckenham said, "an assumption of causes, of the existence of which we have no evidence, to account for effects they do not explain." Whereas the septic theory (whether true or false) accounts for all

effects, the germ theory accounts for not one. It does not account for patients ever recovering when once attacked ; nor for the fact of most cases of zymotic disease not being traceable to contagion from another person ; nor for epidemics ever ceasing ; nor for their being most severe at their commencement ; nor for the fact that anybody ever escapes infection ; nor for the fact of any one of the zymotic diseases ever having arisen for the first time ; nor for deaths from hydrophobia or snake bites ; nor for deaths from inoculation during dissection ; nor for fever from overcrowded dwellings ; nor for any of the phenomena attending deaths from poisons of any kind. Still the question, like all others, is merely one of evidence, and all we, the public, have to do is to wait for some in its favour. When it comes we shall judge accordingly.

Scientific experts think they settle questions of science. There cannot be a greater mistake. All they do is to give their opposition evidence, and then the public judges between them. In some questions of exact science, where all the experts agree, the public judges accordingly. Where in the inexact sciences, like medicine, all the experts disagree, the public settles, as far as anything is settled, according to probability. In everything the public decides. Cooks differ. The public employs those whose dishes please them most. Architects differ. The public chooses those whose houses please them most. Doctors differ. The public chooses those whose remedies please them most. Experts themselves are generally the worst judges of all, for they are all biassed. Thence comes the proverbial saying that "a profession never reforms itself." The public reforms it. The public condemned inoculation, and at once the doctors

had to give it up. As soon as the public condemns vaccination the doctors will be helpless. In astronomy, where the public is without the training necessary to judge evidence, it decides according as astronomers do or do not agree together.





CHAPTER X.

ABOUT VIVISECTION.

As this book is primarily about doctors, I will, before finishing it, give one or two hints upon a much-discussed subject connected with them, namely, vivisection.

It would be easy to relate plenty of sensation stories telling against the practice of vivisection. But I dislike sensationalism, for it nearly always means something exaggerated; and then comes reaction, when the sensationalism will generally be found to have done more harm than good to its own side, as we saw a year or so ago in the case of the Bulgarian atrocities, where sensationalism and exaggerated sentimentality ended in the whole subject being turned into ridicule under the abbreviated expression "Bulgrocities," whilst the eloquent and perfectly right, though exaggerated denouncers of the horrors were dubbed "the vulgarian atrocities." Of course indignation at cruelty cannot be exaggerated; but the exaggeration consisted in looking on cruelty in times of war amongst half-barbarous Asiatic races like Russians, Turks, and Circassians as being novel things to be surprised at, and the sentimentalism consisted in false feeling, or spurious instead of real passion—that is

to say, mere enthusiasm of brains heated by political partisanship. People do not sufficiently recognize the difference between these two things, but I will try to illustrate it.

John Cawdon, a Norwich publican, went to an "atrocious" meeting, enthusiastically seconded one of the most philanthropic of the resolutions, and next day was haled up before the magistrates and got six months penal servitude for nearly killing his wife by hammering her about the head with a clock-weight. Now, John Cawdon, when he seconded the philanthropic resolution, was manifestly not under the influence of the Christian passion of pity or of anything else. His imagination only was heated over an idea. This sort of thing is generally connected with some self-interested considerations, and instead of being called genuine feeling it is only called sentimentality.

"The direful details about vivisection," says Dr. G. Wilkinson, writing on the subject, "are purposely omitted from our pages. No readers should be made to imagine them too vividly. Suffice it to assert that they are horrible beyond imagination." Dr. Hoggan avers that the preliminaries to the tortures exceed in sadness all he has ever witnessed after days of battle. I, too (like Dr. Wilkinson), will leave out the details, and proceed merely to give a hint or two upon the general question.

In the first place, then, "who shall decide when doctors disagree?" Many very eminent medical men say that vivisection is of no practical use whatever. The prime movers for legislation *against* vivisection were sundry distinguished doctors and physiologists. Amongst many others were Mr. Charles Darwin and Drs. Watson, Burrows, Humphrey, Taylor, Rolleston, Pavey, and Antony. On the other hand, we have amongst eminent

men passionate defenders of vivisection, such as Dr. Tyndall, Mr. Huxley, G. H. Lewes, &c., &c.

What is the good of vivisection? "I do not see," says Sir W. Ferguson, "what use it can be of at all." "I have heard," says Mr. G. Macilwain, F.R.C.S., "that many things have been discovered by vivisection. I can only say that it is not the case. I consider vivisection useless, and worse than useless." "Experiments," says Sir Charles Bell, "have never been the means of discovery. The opening of living animals has done more to perpetuate error than to enforce just views." "Professor Rutherford's frightful experiments," says Sir William Thompson, "on the biliary organs of thirty dogs were not justifiable either by the object proposed nor the results obtained or obtainable."

Vivisection is supposed by a vast number of doctors to be not only useless, but even misleading. Animals are no test for men. A doctor gives belladonna to a rabbit, and no harm to the animal ensues, so he gives a dose to a man, and kills him. Then he finds out that though harmless to rabbits it is a terrible poison to men. If he is one of our knowledge-at-all-costs worshippers he will say this fact is cheap at the price. What is a man's life or death compared with a piece of knowledge? But this is the diabolic, not the human, view of the matter.

Again, experimenting on healthy tissue is no test for diseased tissue. "Phenomena of disease," says Sir W. Gull, are not explained by phenomena of healthy texture." A man experimentalizes upon the healthy liver of a dog, and then thinks he has learned something about the diseased liver of a man. But any knowledge he may gain will really only mislead him. If it directs him along a road at all it will direct him along the wrong one. The way to get true knowledge about a thing is

to study it, not to study something else. Surely the whole thing can be nothing but barbarity and bungle. And, in fact, these things go together. Stupidity and want of sympathy are strangely allied in this world. "It is an undoubted fact," says George Eliot, "that want of sympathy condemns us to corresponding stupidity."

"The same experiments," says M. Longet, the French vivisector, "will tell differently on different animals, so the only way to learn is to obtain facts by experiments on man himself (*l'homme lui-même*)."
M. Longet's moral being, I believe, that we should use our criminals for vivisection.

Many doctors want vivisection of criminals to be legalized. But surely it is bad policy confessing such wishes to their patients, as I have known them do. No doubt a man without feeling cannot understand anyone else having any, but if they could only imagine the horror such confessions are apt to cause in some people, amounting to loathing of the man who utters them, I think common professional prudence would make them hold their tongues. But, as I say, they will not be able to understand this. To the callous all people are callous. To the heartless all people are heartless. To the dead all people are dead. Few realize man's inability to imagine what is different from himself. Birds of a feather flock together because they are almost unconscious of the existence of birds of any other feather. So also souls of a feather flock together from incapacity to imagine what souls of any other feather can be. "If," says Schopenhauer, "a large society of reasonable and clever people, with the exception of two of them who are blockheads, were assembled together, these two would immediately feel sympathy with one another, and rejoice each in his turn at having at last found a sensible person." In

fact to them all the other people in the room would be the blockheads.

Mr. G. H. Lewes seems to have devoted his whole life to processes of the understanding alone, till (to judge by what he says of himself in a recent article of a review) he cannot imagine why people oppose vivisection. That the feelings of pity and compassion have anything to do with it, never seems to enter his head. It is as if he does not know that there are such things ; and he is so utterly puzzled that the only way he attempts to account for the opposition of the public to vivisection is by a theory that the vulgar mind is always irritated by the exactness that all scientific research requires. Then he illustrates this theory by saying that the opponents of vivisection are opponents of it on the same principle that your cook is an opponent of your suggestion that she should *accurately* weigh the ingredients she uses instead of guessing them. Of course I do not say that Mr. Lewes is dead to the Christian passion of pity, for I know nothing about him, but it is undoubtedly what his writing about himself implies.

After all, perhaps the doctors are logical in saying that as vivisecting dogs is legal, vivisecting men ought also to be legal. People, no doubt, will say that the latter should not be vivisected because they are superior to dogs. But are all men superior to all dogs ? "Those amongst us," says W. R. Grey, "who are most intimate with dogs, horses, elephants, &c. know that there are many animals far more richly endowed than many man—with higher, richer, and, above all, more unselfish and devoted, and therefore we may almost say more Christian, natures than many men." But if this is so, the inference is not that we should vivisect men, but that we should not vivisect dogs.

Though experimentalization on animals is generally no test for men, this, I need hardly say, is not absolutely the case. Cut off a dog's head and he dies. Cut off a man's head and he dies too. Still the latter fact is pretty well known without the necessity of first trying the experiment on a dog. And so it is with most vivisecting experiments. They generally illustrate what is already known without the illustration. Dr. Brown-Sequard tried a lovely experiment on a guinea-pig. He cut half through its spinal cord with a lancet, and then left the place to heal up again. The experiment, to the doctor's unspeakable delight, turned out a triumphant success, for the little creature suffered terribly, and had epileptic fits during the whole of its future existence. Now of course this teaches everybody who has a mind open to teaching that he had better never allow anyone to cut half through his spinal cord with a lancet. But who wants to allow anyone to do this?

Vivisecting the warm-blooded or sensitive animals must be right or wrong. If right, why need Government meddle or muddle in the matter? If wrong, and Government grants torturing licenses to some of the more eminent medical men, like Sir W. Gull, in this case I say we must expect to see Government granting burglary licenses to some of the more eminent burglars, like Mr. W. Sykes. We all know that ingenuity sufficient could easily show that burglary should be confined to the more respectable professors of the art.

My next hint is about Government making the administration of chloroform to the tortured animals compulsory. Who is to compel it? Chloroform is very expensive. Mr. Robert Sawyer is an excellent and scientific young surgeon, with a wife, five children, and two hundred pounds a year. He is withal ambitious, and wishes to

immortalize himself by discovering how the minute dog-distemper organism, that is too small to be seen by anything but the imagination, lays her eggs in the living tissue. The question then comes to this. Is he to buy ten shillings' worth of chloroform for his dog or ten shillings' worth of mutton for his children. I need not say that he chooses the latter; and small blame to him.

It may be said that the dog will howl and whine for three days, till it dies, and that the neighbours will hear it and tell the policeman, who will forthwith take Mr. Sawyer before the magistrate. But the man who says this does not, I suppose, know that doctors can cut a hole in a dog's windpipe so that he whines in a whisper.

Mr. Sawyer, I say, wishes to distinguish himself. Biographers and newspaper writers generally talk of this sort of thing as "noble devotion to truth for truth's sake," or by some such phrase. But in nine cases out of ten it is just a desire to make a name—natural and perhaps right enough in its way, but nothing very exalted.

I repeat that many eminent men of science state that vivisection neither is nor has been of any practical benefit to mankind. "Oh, but," says Dr. Tyndall, "it will be beneficial some day;" and then (with that versatility that delights us so much in the Irish temperament) quite forgetting his doctrine of matter being the all in all, and containing "the promise and potency of all life" as he expresses it, the professor, in a fervour of holy enthusiasm, announces to the people of Glasgow that, "the beneficent Power in whom we live and move and have our being" is to be propitiated by—what does the reader suppose? By a life of conduct inspired by the nobler Christian passions; by a life of faith, of hope, and of joy? By a life of devoted unselfish activity; of striving to be "perfect, even as our heavenly Father is perfect;" of

rejoicing with those that rejoice, and mourning with those that mourn? By a life of hunger and thirst after righteousness, and therefore filled with it? Nothing of the kind. The all-powerful and beneficent Power "in whom we live and move and have our being" is to be propitiated by cutting up live cats and dogs, and by freeing oneself from "the hideous cruelty," as Dr. Tyndall expresses it, "of those who would prevent people from doing so." I can fancy the saintly glow of rapture over his face, as the professor, full of the Holy Ghost, like the martyred St. Stephen, seems thus to have beheld the heavens open and read aloud to his adoring disciples the things he saw written within.

"We are accustomed," says Frances Cobbe, "to hear that vivisection is justifiable, but it was reserved for Dr. Tyndall to discover that it is religious, and that the God of Science is henceforth to be propitiated by it."

I do not accuse Professor Tyndall of cruelty, for I know nothing about him personally. What a man only says sometimes gives a totally wrong impression of what he *is*. "I shall," says Mrs. Ford, talking of Falstaff in the "The Merry Wives of Windsor," "I shall think the worse of fat men as long as I live; and yet he would not swear, praised women's modesty, and gave such orderly and well-behaved reproof to all uncomeliness, that I would have sworn his disposition would have gone to the truth of his words; but they no more adhere and keep place together than the Hundredth Psalm to the tune of 'Green Sleeves.'" Thus, as I say, I do not accuse the Professor of cruelty; like Falstaff, his words and what he *is*, may no more go together than the "Hundredth Psalm" and the tune of "Green Sleeves." Still, what the public have to go by are his public utterances. And he has published his passionate defence

of practices that are attended with terrible suffering, so there is no doubt about that ; and I confess that it makes me boil over to read a clever man's eloquent word in glorification of these frightful barbarities that must necessarily not merely have no end, but must even be ever increasing in geometrical ratio. For what end can there be to vivisection ? As the circle of scientific knowledge enlarges, the circle of scientific ignorance necessarily enlarges too, for it is touched in so many more points. " Human knowledge," says Sir W. Hamilton, " is like a farthing rushlight, surrounded by an infinite expanse of darkness." " Men," says Archdeacon Hare, " are always foolishly believing themselves to be approaching the end of knowledge, but they will be no nearer the end in a thousand years, for possible knowledge is infinite." " Man's search after knowledge," says Sir Isaac Newton, " is like a child picking up sand on the shore grain by grain." " What we know," says Emerson, " is a point to what we do not know." " The little light," says Mr. Huxley, " of human intelligence, shines as a mere speck amidst the abyss of the unknown." " Our ablest endeavours," says Professor Owen, " to penetrate the secrets of nature, do but carry us a few steps onwards, and then leave us on the verge of a boundless ocean of unknown truth." " Farther and farther," said Mr. Mallock, " are men pushing their conquests into regions that were once mysterious, and yet the mystery that has not been conquered remains more formidable than ever." " In studying," says Mr. Grove (author of the " Correlation of Forces ") " in studying the *modus operandi* of the brain, nerves, and muscles, we find the effort to establish one observation leads to the imperfect perception of new and wider fields of research, and, instead of approaching finality, the

more we discover the more infinite appears the range of the undiscovered."

"The solution of each question," says the eminent surgeon, James Hinton, "does but raise twenty more. There is no end, and with each advance the collateral branches of inquiry only become the more numerous, enticing, and difficult."

The solution of each question only raises twenty more! Thus if the solution of some question may at some future time have at length been reached by doctors after many years' investigation, and the vivisection of, say, 5000 dogs, the solution of the twenty more questions thus opened out will require twenty times 5000 dogs; that is to say, it must require 100,000 dogs. But each of these twenty questions only raises twenty more, and so on, *ad infinitum*. By the way, where are the dogs to come from? Dr. Tyndall! here's an opportunity for you! Set up a dog-breeding farm, and make your fortune. An era of scientific research is coming, and the demand for them will be absolutely without limit.

One or two more quotations from eminent men.

"We," said James Hinton, who knew all modern science and theories of the day, "we have yet hardly taken the first steps toward an understanding of the laws of matter. On no subject do we know more than a few isolated facts. Our minds will not hold a complete system of doctrine on any conceivable topic. There is no fact or power in nature we can trace back to its source or forward to its ultimate bearings. Every one of our systems is false, and we know it. Perfect truth must be founded on perfect knowledge, and this we can never have." Again he says, "the highest effort of man's intellect serves but to prove to him how absolutely he fails to understand the least and simplest of God's works."

Bishop Thirlwall, writing about God's doings, says, "we must resign ourselves to the consciousness of our utter inability to trace His working through the stages of nature. We must reconcile ourselves to the admission that God's ways are not our ways, nor His thoughts our thoughts. Is that so hard a confession for a creature whose dwelling-place is as a grain of sand on the sea-shore?" "And yet," he goes on to say, "it is given us to see in the light of experience an ever clearer manifestation of a loving will, of a reign of law, beauty, and goodness, gradually prevailing in the midst of seeming lawlessness and confusion, and culminating in a kingdom of God upon earth." There, you poor carvers of live flesh, there are a few words for you brought down from a higher atmosphere than you often breathe. But I suppose it is no use. You will not understand them. Most of you believe in the fortuitous concourse of atoms of Lucretius; or, in other words, in evolution that comes *only from chance*: and instead of believing in the kingdom of God upon earth, you believe that the very word "belief" itself should be wiped out of all dictionaries, and that the term "kingdom of God" really means "an era of physical research."

A hint now on the other side of the question, that is, in favour of vivisection.

It is a sad thing, but scarcely any human pursuit can be followed without its tending to deteriorate the character somewhere—one pursuit in one way, another in another. "To lie like a tooth-drawer;" "to cheat like a horse-dealer;" "to make the worse appear the better cause," like a lawyer; "cruel as a butcher;" "ten doctors, nine atheists;" these are all proverbial expressions; whilst we sometimes see how political party spirit will destroy patriotism and make one party delight in, and even try to bring about, some national disaster that may tend to

throw discredit on the opposite party. A specialist always suffers in soul for the one-sidedness of his life, though the man who has no pursuit at all will often undoubtedly suffer far more than any of them for the want of one. Now, one of the most beautiful and admirable parts of human nature is sympathy with and pity for physical suffering; and yet surgeons have to kill this part more or less. What, for instance, could be more lamentable than to see some operator for cancer unable to proceed with his operation in consequence of his eyes being blinded with tears of compassion, and his hand trembling from sympathetic sensibility, or (if he does proceed) killing his patient? Now, private practice upon dogs and cats might undoubtedly help to get over this sensibility. "I will try," says the Queen in Shakspeare's "Cymbeline," "I will try the force of these thy poisons on such creatures as we count not worth the hanging." "Your Highness," was the answer, "shall but make hard your heart." And, in fact, the hardening effect upon the heart of such practices is a necessity.

"Any invention," said the celebrated Dr. Majendie, speaking against the use of chloroform, "any invention to annul pain is of small interest to surgery."

Some of the answers at the Parliamentary Committee on vivisection were admirably honest and straightforward.

"Are you," Dr. Klein was asked, "prepared to acknowledge that you hold as entirely indifferent the sufferings of the animal which is subjected to your investigation?"

Dr. Klein: "Yes, entirely."

"The expressions," says Frances Cobbe, "of several of the witnesses before the Royal Commission on vivisection seemed to display a callousness and a stupidity regarding animal suffering little short of absolute moral blindness,

and proving the fatal influence of their pursuit upon the human heart."

"I used," says Dr. Walker, "to dine with a lecturer on physiology; but one night I found I could not enjoy my cigar or dinner because we had the day before gone through the 'laboratory,' and I could not get rid of the imploring looks of the dogs. It appeared to me that my friend was indifferent; but he had been a vivisector for some years. I was a beginner."

Loss of capacity for compassion leaves a soul terribly truncated. Indeed, Mahomet seemed to think it the distinctive characteristic of mankind in contrast to animals. He defines "man" as "the being who feels compassion."

Vivisectionists pay a fearful price in this destruction of a part of themselves, which, as Dr. G. Wilkinson says, "must happen when any good affection is deliberately crushed in the character, but most of all when high and holy motives are made pretexts for the act." "Vivisection lectures at a university," says Dr. Haughton, "are calculated to rear a class of young devils."

I lately read in the newspapers an account of a surgeon who was attending a woman for a dangerous knife-wound. The wound was in a fair way for healing, when the doctor discovered that she was so poor that she would probably be unable to pay him. So he cut the wound open again, and put it back to exactly the same state it was in when first she came to him. Then he sent her away. This man evidently thought that "the workman is worthy of his hire." I wonder whether he was a vivisectionist. At any rate this is the sort of thing we must come to if unbridled vivisection is to prevail.

Here is a pleasant little incident told us by Mr. Macilwain.

A doctor in a hospital coming to a patient whose leg had been broken, rubbed the ends of bone together to let the pupils hear "the crepitation." As he passed on, the young men repeated the operation *in the interest of science*, and when the patient screamed out and writhed in agony, the doctor only cried out, "Hold him down, hold him down!" Well may Dr. Moxon say, "There is growing up a generation of physicians who are so imbued with the scientific spirit as absolutely to forget that their profession has a practical aim."

Another little incident given to Mr. Macilwain by an eye-witness.

A patient in a hospital was suffering from dislocation of the wrist, which, after the setting, requires splints and bandages. But in this case the wrist, though set, was left unbandaged, in order that the dislocation might recur for purposes of demonstration. Queer things seem to happen in hospitals.

A case of hydrophobia in a Glasgow hospital was reported in the newspapers not long ago. A witness wrote, "When seen at mid-day, the patient seemed in a fair way for recovery, but at 3.30 P.M. an event occurred that completely altered the aspect of the case. Whilst the patient was calmly in bed *a dog passed through the room* and was seen by him. At once he started up, with eyes staring, arms extended, and whole countenance indicating intense horror. He jumped out of bed and fell on the floor, groaning and tossing himself about. For a short time there seemed a lucid interval, but then, *after being breathed upon and fanned with a towel* he became maniacal. The man complained bitterly of being experimented on."

The above case, says a medical man, demonstrates that the practice of cruel experimentation on the lower

animals leads as a matter of course to disregard of human suffering, and shows beyond question to what medical practice will assuredly come in hospitals, and out of them too, if the public does not interfere.

Another little incident.

"I admire," says a writer in the "Hornet" newspaper, "presence of mind, but I think it was almost carried to excess the other day by a distinguished hospital surgeon, who was performing a difficult operation before a knot of admiring students. Unfortunately at a critical point the patient expired. For a moment the operator looked disgusted, but, recovering his composure, he said, 'After all, gentlemen, it is not of much consequence. I will proceed with the operation, and show you how I should have completed it had not the patient succumbed.'"

These and innumerable other such stories illustrate the callousness that almost must come to all men from habits of vivisection, and even (more or less) to many medical men merely from familiarity with causing pain. It is like the callousness about moral evil that sometimes comes over lawyers after lives of constant familiarity with every species of crime and vice. A lawyer was once employed by a railway company to defend it in an action that was brought for running over and killing a child. The lawyer's defence was very eloquent, his principal argument against the awarding of damages being, that if they were awarded, everybody would be eternally sending their children on to the line to be run over. Now, I suppose this man had passed his whole life studying crime, criminals, and criminal cases, till at last he had lost all power of conceiving even the existence of such things as natural affections, or of any motives for conduct other than selfish and money-seeking ones.

We are sometimes told that to charge cruelty upon

doctors who devote their lives to assuaging human ills, is absurd. But this is mere confusion of mind. Doctors follow their profession to earn a livelihood. "Assuaging ills" is the means, not the motive. Many doctors are, of course, kind and compassionate as men can be; but it is in spite of their calling, not in consequence of it.

Another thing we are told is, that the object of the vivisector in torturing animals is to benefit mankind. But this, again, is nine-tenths nonsense. His object, as a *rule*, is to make a name for himself. Some few men habitually act from the very highest motives, but ordinary people are of course ordinary people—that is, they act from ordinary motives.

It is rare to find statements that are not either exaggerated or one-sided. "The anatomist of the day," says Ruskin, "desires knowledge not for beneficence, but solely for its own sake." "No," says Mr. Morley "it is not so. He desires it in order that the physician may be able to kindle a work of God's into life, and to restore the child to its parent, and the father to his home." But the truth is, as I have said, ordinary people are good enough sort of folks, who act from ordinary motives, mostly of the doing-well-for-one's-self-and-one's-family order, or to distinguish themselves. Some few men are heartless scoundrels and some few exalted souls act habitually from the perpetual inspiration of the highest and noblest Christian passions." But we cannot all expect to be exalted souls. "Many are called, but few are chosen." In fact, such people are rare. So rare that the average man of the world disbelieves in them; though perhaps he has nothing in himself to enable him to recognize one if he did come across him. On the other hand, the absolutely heartless scoundrel is perhaps equally rare.

There is no doubt Ruskin is right, and by certain

people knowledge is sought at all costs solely for the sake of knowledge. But the thing is only one of the insanities ; like the mania for hoarding money.

Money and knowledge are each for the uses of life, so he who collects either of them solely for the sake of collecting it, is insane. Frances Cobbe says, "The law of love and mercy is alone divine, whilst the thirst for knowledge may be the passion of a devil." Mankind agrees with Frances Cobbe in this ; and our knowledge-hunting devil knows that it does, but he says mankind is a fool for agreeing with her. Perhaps so, but mankind prevails, fool or no fool, and so all devils go to the wall. Some get hanged, some hang themselves; all are joyless, and most are miserable.

Anything allowable so long as knowledge is gained ! Then it would be allowable, for the sake of gaining anatomical knowledge about the action of the facial muscles, to torture a man to death !

A Mr. France, of Worthing, was had up not long ago for driving a horse to death. His counsel's defence was, that it was a scientific experiment made in the pursuit of truth, to learn whether it was possible to drive a horse to death, and that the result was a valuable contribution to science. The magistrates took a different view, and sent the man to prison for two months. I suppose our vivisectors would say the magistrates were wrong.

I am reminded here of a charming bit of confusion on the part of Mr. Leslie Stephen. He is writing about "truth for truth's sake alone." First, he tells us we ought *not* to act from faiths, creeds, or beliefs, because they are only *dreams* that cannot be proved to the understanding. Secondly, he tells us that we ought to act from the motive of pursuing truth for truth's sake. Then we *ought* to act from dreams that cannot be proved to the understanding.

Now which does he mean, or does he mean both, or does he mean neither. That we ought to pass our whole lives pursuing truth solely for the sake of truth is a faith, creed, or belief, (or what Mr. Stephen calls a dream) possessed, no doubt, by a minute fraction of mankind, but which can of course no more be proved to the understanding than can any faith that was ever conceived. Again, Mr. Stephen says we ought to act from high motives and not low ones, which again means that we ought to act from *faith*. To believe some motives to be higher than others is an act of faith in the truth of one's own intuitions (or dreams, as Mr. Stephen calls them), and can no more be proved to the understanding than can the faith of the savage who believes the sun and moon to have once been a man and a woman who lived on the earth. Even men of Mr. Stephen's own school deny that truth should be pursued for its own sake. Mr. G. H. Lewes says, that the only object of the pursuit of truth ought to be the improvement of human conduct (which means the exaltation of human character), and thence improvement in human happiness.

Some of our philosophical and scientific teachers, with their confused ideas, are better than any comedy.

I sometimes wonder whether confusion of mind delights other people as much as it does me. That it does delight them more or less is evident by the proverbial amusement caused by Irish bulls.

The fact is this. The creed that a man ought to devote his whole life to the pursuit of the "Will o' the Wisp" truth for its own sake alone is a pernicious superstition of a few weak, credulous, and eccentric dreamers, which, if acted up to, would lead to abominations without end. If instead of the beliefs and lives aimed at amongst Christian peoples, such as, for instance, that men should

"do justly, love mercy, and walk humbly with their God;" that they should "visit the fatherless and widows in their affliction, and keep themselves unspotted from the world;" that they should "love God with all their strength and their neighbours as themselves;" that they should "do their duty in that state of life unto which it has pleased God to call them;" that they should "endure hardness," and strive with a passionate "hunger and thirst after righteousness" and Godly lives;—if, I say, instead of these human, manly, living, and Christian "dreams," as, I suppose, Mr. Stephen would call them, we are to substitute the one bloodless, heartless, dead-alive doctrine that man's sole business on earth is to live his life ferreting out with only his senses and logic sundry somethings he calls truth, solely for its own sake and regardless of and dead to all other considerations,—if, I say, this is to be done, we may expect horrors compared with which the Bulgarian atrocities were child's play. The doctors would vivisect all the condemned criminals and felons, as many of them already confess they wish to do; they would experimentalize in hospitals with unbridled barbarity; the physiological mother would anatomatize her infant instead of nursing it; the father devoted to "research," instead of sending his son to school, would keep him at home to dissect; and no man's life would be safe from a set of soulless, analyzing, prying monomaniacs, possessed by the crazy dream that it is "the whole duty of man" to pursue at all costs "truth for truth's sake alone."

I call truth a "Will o' the Wisp"; for what is it but a shifting phantom never reached and never to be reached? George Eliot talks of "that complex, fragmentary, doubt-provoking knowledge we call truth." James Hinton says that all our so-called knowledge is at bottom false knowledge, and that we know it to be

so ; Charles Lamb calls our knowledge nothing but our ignorance classified, and Lessing says that truth being unattainable by man, is for God alone.

From one point of view truth may be said to mean psychical states (to use Herbert Spencer's phrase) resulting from correct relation between each creature (from a crab to a demi-god) and the world which is external to it. But no two of these creatures are exactly alike, so this relation, or what is called truth, must be a different thing for each of them. This may suggest one reason why truth is a phantom that never can be grasped ; though A will always possess certitudes subjectively, and so will B. Most people are quite certain that they smell, taste, see and hear, and many are equally certain that they love one, hate another, worship God, revere excellence, and pity the miserable, though no one of these things can be proved. Thus we may see how it is that we cannot live by truth or what is provable, though we all can and all do live by faiths ; that is, by what Mr. Stephen, in his confusion, calls dreams.

Without faith we cannot live, say what the materialists may. We never even eat a mouthful of food without faith that we shall digest it, though what the food is or what we are we can never know ; and how we digest the food or how its dead particles become living tissue is an eternal mystery and miracle that can never be comprehended by the understandings of men—can never become knowledge or realized truth.

Here perhaps "the fool will say in his heart" that I deny the existence of truth ; but if he does, the fool will talk nonsense as usual, for I do nothing of the kind. I only say with Lessing, that really true truth "is for God alone ;" with Mr. Huxley, that man cannot know anything as it really is ; with Tennyson, that "we have but faith ;

we cannot know ; " with St. Paul, that " we can only see as through a glass darkly ; " and with Job, that perfect truth " is high as heaven, what canst thou do ? deeper than hell, what canst thou know ? "

Though truth can never be grasped, contribution towards truth may for ever be made without limit.

Mr. Stephen who condemns faith in unverifiable things, and calls such faiths dreams, may say that food is eaten, not from faith, but because it has been verified and proved to the understanding that if living creatures do not eat food they die. But food is eaten for no reason of the kind. All living things eat because they are hungry, and because they all, except a very few men, called analyzing philosophers, have faith, conscious or unconscious, in the truth of their own instincts and intuitions. A sheep does not eat grass because it has first verified to itself the fact that it will die if it does not eat it.

It is the law of God that all sentient creatures should live by faiths innumerable, conscious or unconscious. If anyone prefers the law of Mr. Stephen to the law of God, let him try it. But I recommend him to make his will first, for his life will be a very short one. Life without faith is impossible.

What materialists call dreams are the real realities, and what they call realities are much the same as nothing. Christianity—that is to say, likeness to Christ—shown, amongst other ways, by impassioned, self-forgetting devotedness and reverentialness of character, together with the faiths and intellectual conceptions that belong to this type of character—this (the extreme known degree of " life ") is the most real of real realities. And yet the materialist puts it all under the head of " dreams." A lump of lead is his idea of reality ; and he calls it so because he thinks

it verifiable. But what does he mean by thinking it verifiable? I suppose he means that it can be shown to be as heavy as a piece of brass; and the piece of brass is verifiable because it is as heavy as the piece of lead. It is like Mr. A., the racing man, who verified the excellence of his horse by saying that he was as good as Mr. B.'s horse, whilst Mr. B. verified the excellence of his horse by saying that he was as good as Mr. A.'s horse.

The truth is, nothing is absolutely verifiable. All we can do is to compare one unknown thing with another unknown thing, observe the relation between them, and then call this relation knowledge. And of course, for the practical purposes of life, it will often serve as knowledge and be useful. We do not know what life is, and we do not know what matter is. Still we can often learn sufficiently for practical purposes the relation between these things; as, for instance, that if life, say a living man, runs violently against matter, say a brick wall, he hurts himself.

The genuine materialist cannot see that "life" is the real reality; for he worships (if he can be said to worship anything) only the negation of life—only the dead residue left after all "life" has been analyzed away from it.

I say that certain conceptions and faiths belong to certain types of character—that is to say, that they come from the passions. The passion of hunger creates the faith in and the conception of food. The passions of reverence and worship create the faith in and the conception of objects of reverence and worship. The passion for beauty creates the faith in and conception of beautiful things. The passion of covetousness creates the faith in and conception of objects to be coveted—and so on throughout human nature. Thus, if anyone is without

faith in anything being fit to eat, it means that he is without hunger. If anyone is without faith in beautiful things, it means that he is without a soul for beautiful things. If anyone is without faith in the beauty of harmonious music, it means that in the matter of harmony he is a dead man. If anyone is without faith in the existence of objects of reverence and worship, it means that he is without the natural passions of reverence and worship.

The negations of materialists nearly in all cases mean some defect in character—the absence, that is, of some natural human affections or passions. How such deficiencies arise we cannot know, though we can make guesses. Watchmaking for a few generations destroys the forces of the eye so that it cannot see distant objects. In the same way, it is easy to imagine how exclusive devotion to analyzing, and to certain scientific and philosophical pursuits, for a few generations, will lead to the destruction of some of the higher passions and forces of the soul. Indeed, Hazlitt said that this will often be the case even in one generation. But these things cannot be traced out, for the complexities of life are infinite. I know that certain pseudo-sciences, like sociology or phrenology, pretend to explain and map out human life, but it is only pretence. Life is an inscrutable thing. A man cannot know what is in the soul of another man. Nay, he cannot know what is in the soul of even his cat or his dog.

The science (so-called) of sociology professes to be founded on experience. But a wise saying says that in human conduct “we can be sure of nothing except that unforeseen things will happen.” “In love,” says Mr. Lowe, “in war, in politics, in religion, in morals, it is impossible to foretell how mankind will act.” And it must be so; for to act alike people must *be* alike. But no two men are, ever were, or ever will be, alike. No

two nations are alike, and no two generations even of the same nation are alike. Nature is infinite in variety, and never repeats herself. Thus, to attempt to measure human conduct—that is to say, human character; that is to say, human passions; that is to say, human life—by the yard like calico, or by the pound like Stilton cheese, is absurd. We will suppose the thing attempted. Take the case of the oriental uncivilized person who worshipped his fetish—a bit of wood he wore on a string round his neck. Well, our sociologist comes, weighs and measures this religion, and then thinks the matter settled for ever. But a Mahomet appears upon the scene. How about the weights and measures now? At once the fetish is discarded, and for the next few thousands of years the uncivilized oriental person, together with untold millions of his fellow-oriental uncivilized persons, instead of a bit of wood worships God and his prophet. The fact is, though we can weigh potatoes, we cannot weigh the holy spirit of life. “The wind bloweth where it listeth, and thou hearest the sound thereof, but canst not tell whence it cometh, and whither it goeth: so is every one that is born of the Spirit.” True, however, as this is, we still want any facts that are attainable, even in such pseudo-sciences as sociology and phrenology; and that there are such facts is undoubted. That some men fall in love is a sociological fact; that some have brains is a phrenological one.

Corresponding to the third-class scientist's maxim, that “we should seek truth at all costs solely for the sake of truth,” is the third-class artist's cant about “art for art's sake alone,” and other such maxims that are no good for a man, however suited they may be to the eighth part of one. Matthew Arnold says that “conduct” is six-eighths of human life, art one-eighth, and science or knowledge the other eighth.

Of course we want art, and of course we want contributions towards truth to any amount ; but the doctrine that the ideal of human life means either one of these things is ludicrous. "What do you think," Garrick was asked, "about Adam Smith's talk?" "Flabby," was the answer, and, I doubt not, the true one ; for Adam Smith, though he contributed very much towards truth, seems not to have been a man, but only what Matthew Arnold calls the eighth part of one—that is, a mere science or knowledge-hunter. One hot summer morning he walked out into his garden in his night-gown ; but when he got there, his mind becoming abstracted about the meaning of the word "wealth," he wandered on to the public road, and then walked slowly on and on, till at last he came to conscious life again in the market-place of a town ten miles from his house. It was market day.

The stories of abstracted machines of this kind are endless. A profound utilitarian philosopher once fell into a river. He was an excellent swimmer, but being at the moment his boat was upset in an abstracted state, and, indeed, on the point of discovering that the phrase "the greatest happiness to the greatest numbers" has, after all, some definite meaning, he forgot all about being able to swim, and so sank like a stone and was drowned—a circumstance to be regretted, inasmuch as utilitarian philosophers have ever since been trying to find out what "the greatest happiness to the greatest numbers" means, but are as far from doing so as ever.

Jonathan Edwards was another most distinguished logic machine. Being the minister of his parish, he thought he ought to be affable to the members of his flock. One day, when out riding, a boy opened a gate for him. "Thank you," said the great Calvinist, "whose little boy are you?" "I am Noah Clark's boy," was the answer. In a short time Jonathan Edwards re-

turned, and again the gate was opened for him. "Thank you," said the minister again, "whose little boy are you?" "I am Noah Clark's boy," was again the answer; "the same man's boy I was a quarter of an hour ago."

Now these stories show what it is to be a ratiocination machine instead of a man.

A "man" means an aggregation of living motive forces, passions, joys, hopes, fears, loves, hates, desires, and senses. But in addition to these motive or active forces he has intellect, a thing without which he is good for nothing. But this intellect is not the living man, but only an instrument he uses; a sort of chisel, more or less sharp, for putting into shape the raw material of life. A man says, "I will turn my thoughts to the matter," just as he says, "I will turn the handle of an organ;" but the thoughts are no more the man than the handle is the music; or, at most, they can only be called an eighth part of him. Thus we see how it is that a Jonathan Edwards or an Adam Smith can only be called the eighth part of a man. At any rate his parishioners seemed to look on the former in this light, and so, although he was the most logical Calvinist of his day, and the most eloquent consigner of the human race to eternal torment who ever lived, they soon sent him to the right-about, and got a whole man instead of only an eighth part of one to take his place.

Art for art's sake alone, regardless of all other considerations than art, and truth for truth's sake alone, regardless of every other consideration than the pursuit of it at all costs, are both of them pernicious dogmas of narrow-minded, one-sided, and partially insane people. Of course I do not mean that a man who writes a poem or a novel should pelt his readers with morals to them, for he should do nothing of the kind. The Chinese pass

their lives till they are seventy years old going in for competitive examinations in the moral maxims of Confucius and other philosophers, and, according to all accounts, the Chinese are the most immoral, the most corrupt, and the most barbarously cruel people on the face of the earth.

Christianity is the opposite to Chinese moral maxim-mongering. The latter, being a mere outcome of philosophers' brains and reasonings, has no influence on the conduct of mankind. "None but a bookworm," says Strauss, "could ever imagine that a creation of the brain woven out of philosophy can take the place of religion." Christianity, on the contrary, being the exalted passions or motive forces themselves that produce action, leads to godly lives in proportion to its degree.

Our materialists have lately taken to belaud the great Asiatic religions (so called), especially Buddhism. Now, though I called Confucianism the opposite to Christianity, we must go to Buddhism for the actual and extreme opposite. Whereas Christianity wages war against deadness of soul, or the negation of life, Buddhism wages war against life; that is, against action; that is, against every passion human and divine. Whereas Christianity wages war against the unprofitable servant, Buddhism wages war against the profitable one. Whereas the Christian saint is a manly saint, who beareth all things, hopeth all things, endureth all things, and endureth "unto the end;" the Buddhist saint is an effeminate coward, who shun-neth all things and liveth his death "unto the end," with about the manliness of a cabbage.

The Christian saint is an active energetic man, who "endures hardness" in the pursuit of all righteous objects, and is full of warm natural affections, of passionate delight in the works of God, and of practical

usefulness to those around him. The Buddhist saint is a man who has reached Nirvana, which means a stagnant, passionless state of contemplative idiocy. Asia is full of these saints ; and very filthy saints, according to all accounts, they seem to be. Why, the worshippers of the rowdy gods of Rome and Greece were infinitely better ; for, at least, they were alive.

Why do some of our materialists hold up Buddhism to our admiration ? Is it because Buddhism renounces faith, hope, and joy, free agency, belief in God, and delight in His works ?

The materialists, who deny and renounce these things, are like the idealists Berkeley and Mill. Grant them their premises, and denial of the existence of matter is, as Coleridge said, impregnable. Still mankind pays no attention to these philosophers, and goes on believing in the existence of matter just the same as before, simply because it is their nature to do so. So it is with the materialists. Grant them their premises, and their doctrines may also, perhaps, be impregnable. Nevertheless mankind pays no attention to them, and goes on believing in God, and in themselves being free-acting responsible beings instead of automatons, just the same as before, simply because it is their nature to do so.

A sheep once demonstrated to a wolf that mutton was less wholesome than grass. The argument was impregnable. Nevertheless the wolf immediately proceeded to eat up the sheep, blood, bones, demonstration, and all. And he did this simply because it was his nature to do it.

One little consideration both the Berkeleyites and the materialists seem to forget, namely, that fundamentally premises are for ever unknowable by man.

Having relieved my readers' minds from dwelling for

too long a time together upon a very sickening and horrible subject, I will now bring them back to it, and continue my observations upon the crucifiers, cutters, and carvers of our humble fellow-creatures.

Those who like may read the evidence before the Committee on the subject of vivisection ; how the operators glory in being so devoted to "research" that they are absolutely indifferent to witnessing suffering, whatever the degree of it ; how dogs and cats, after being crucified and cut up, not for new discoveries, but merely to illustrate lectures to students, are at length thrown on the ground to creep into a corner to die, the brutes not even taking the trouble to kill them ; and how numberless other things of a like kind take place. I say those who like may read these things, for they are all printed. But unless for some useful end I do not recommend anyone to do so. Such reading is not calculated to edify developed or Christian men, although, judging from accounts we read, it would very likely afford entertainment amongst some of the North American tribes of Indians. The Chinese, too, would probably appreciate it. "I should shrink with horror," says Dr. Haughton, "from the idea of accustoming young medical students to the sight of animals under vivisection. I believe that science would gain nothing, and that the world would have let loose upon it a set of young devils."

I suppose few even of the operators themselves would deny the hardening effect upon the character of vivisection. In fact, they confess, as we have seen, that habit makes them indifferent to the suffering. Now, anything and everything is apt to be inherited ; so (to apply Mr. Darwin's doctrine of reversion) one can easily imagine habitual vivisection reviving some long dormant cruelty of some savage, or even anthropoid, ancestors ;

which cruelty would again be inherited by the vivisector's children and children's children, and in this manner families of devils might be gradually let loose upon the world. Heredity, though old as the hills, as "original sin" and other doctrines, has only lately taken the form of precise scientific knowledge.

We cannot always act on the opinions of women. Their reasoning is undoubtedly apt to be somewhat chaotic. Still, the instinctive feelings of women, as an indication of truth, are not to be despised. And what do they say when they hear accounts of vivisection? Well, they do not always say much, but what they do say is emphatic. Every woman I observe, without exception, exclaims in her very largest type—"BRUTES."

I say without exception *within my observation*, but is it absolutely without exception?

I wonder whether it is generally known that dissection of animals is beginning to form part of the education of young ladies at their schools and colleges. Mrs. Gordon (who writes on the subject) was told by a friend of hers that one day at luncheon he was astounded at hearing a young lady talk of having just been dissecting a cat. He thought it a joke, but on inquiry he found she had actually been cutting up "a fine tabby," though not a live one. This was merely private practice at home. Well, there is no accounting for manners and customs of different ages, but I must say I should prefer to see a daughter of mine occupied according to more old-fashioned notions in cultivating all that is lovely in human life to passing her time in charnel-houses, prying into matters that are beneficially hidden from view, and thus deadening her natural, and therefore right, instincts to shrink from such things, and risking the hardening and brutalization of her nature. Of course this risk must be run more or less by those whose calling is that of medi-

cine ; but I am supposing my daughter not to be one of such people. The poet Goethe thought that young people ought never even to see pictures of anything ugly. He said such things must have a debasing influence on the character. Still, ideas of this kind can be carried too far. Human life is a practical thing, and "culture of the beautiful" gone mad, as it does go sometimes, is one extreme as contemptible as the other extreme is disgusting ; for, disgusting it is. Dr. G. Wilkinson talks of "the mental filthiness" vivisection induces in the habitual practiser of it.

"It is a painful fact," says Sir Philip Crampton, "that the human mind by being familiarized with scenes of cruelty, may be brought to extract from them a kind of insane gratification which extinguishes the better sympathies of our nature."

A new bit of knowledge, however small, cheap at the price of suffering, however great !! This, as I have said, is at the present day the motto of many seekers of knowledge, worshippers of their own wretched intellects, "starvers of the heart to stuff the head," destroyers of the noble and Christian, or, to use a cant word of the day, "altruistic," passions, in order to become pieces of machinery for analyzing and observing and recording facts. What will happen if this type becomes, by the process of evolution, at all general will be curious to watch. Perhaps the gradual extinction of the human race, for, to take only one instance, if maternal love becomes extinct, and makes way for "research," the mother instead of nursing her child will vivisect it to improve her mind and acquire knowledge. We already come across foreshadowings of this sort of thing. I heard not long ago a story of the beautiful Lady ——. She had just been confined ; but the sex was wrong, so she said, "To think that I should have gone through all this for a d—d girl." No doubt

she would have stuck a knife into it if she had dared. I wonder whether this countess had had a *physiological* education. Any way, she is the kind of woman one would expect that sort of education to turn out.

There is another story of a beautiful and fashionable young lady of the period, who had been brought up from childhood with the utmost kindness by her aunt. At length came the time when the aunt was on a lingering death bed. She was subject to fainting attacks, and one night a fit that looked like death came on just as the young lady was going to a ball. Here was a dilemma. If it was only a fainting fit she could go ; if it was death she could not go. The lovely young person of the period was up to the occasion. She got a pin, ran it into her aunt's leg, found she was still alive, ordered the carriage, went to the ball, and enjoyed herself very much. Whether this was the same young lady I mentioned a page or two back who dissected the tabby cat before luncheon I do not know, but it is not unlikely.

Education has always hitherto meant culture of spiritual qualities ; but perhaps this is to be changed, and education in future will mean study of the bodily organs. In the baptismal service, god-parents have hitherto been instructed to call upon their god-child "to hear sermons, and chiefly ye shall provide that he may learn the creed, the Lord's prayer, and the ten commandments in the vulgar tongue, and all other things which a Christian ought to know and believe for his *soul's* health ; and that he may be virtuously brought up to lead a godly and Christian life. Ye are to take care that this child be brought to the Bishop to be confirmed by him, so soon as he can say the Lord's prayer," &c., &c., &c. But, as I say, all this will, I suppose, be changed, and in future the rearers of a child will be told to "call upon him to hear physiological lectures, and chiefly ye shall provide that he learn the

use of the diaphragm, the liver, and the duodenum, and all other things that a person ought to know and understand for his body's health ; and that he may be scientifically brought up to lead an analyzing and inductive life. Ye are to take care that this child be brought to the doctor to be vaccinated by him, so soon as he has reached the age of two months." Well, I suppose time will show which system is best—providing primarily for the spiritual or bodily well-being. No doubt both are wanted even for the good of each other, and sermons are not always edifying. Still they must be better than vivisection. At worst they can but induce sleep, and any way they will not harden, deaden, corrupt, or brutalize.

Many of our materialists who are full, in spite of themselves, of the inherited Christianity of eighteen hundred years—the Christianity they revile in words—many of them I say inculcate the noble or Christian passions (which they nickname "altruistic") as eloquently as any Christian, but they give us to understand that the way to do this, is first to discover by vivisection the glands that secrete what Christians call "the Holy Spirit," and then endeavour to foster these glands. But it will be long before the general public has advanced so far as this ; indeed, most men of noble natures, even though they refuse to call themselves Christians, abhor all such materialism. "We reject," says F. Harrison, "materialism as earnestly as anyone can. It is a corrupting doctrine to open a brain and to tell us that devotion is a definite molecular change in this or that convolution of grey pulp."

"Where," says Mr. Herbert in the "New Republic," "where does the present age seek the vital truths of life? Does it seek them in justice or loving-kindness, or in the vision of the most high God? No—but in the dissection of the rotting bodies of dead men and the writhing bodies of live cats."

Study the animal world, carve live dogs and analyze deep enough, and all the (so-called) spiritual phenomena of the universe will be revealed !!

"O, ye philosophers," says Mortimer Collins, "there is room for great discovery in connection with the higher nature of man. But it is not our relation towards the beasts that perish which requires investigation ; it is our relation toward God who created us in his own image." "Man's happiness," again says Mr. Collins, "depends on his horizon : the higher we rise, the wider the circle and the nearer the absolute light. Your modern blunderers—negative men who call themselves positivists—dig deep holes and descend into them to narrow their horizon. They are moles, earthworms, newts. They cannot learn a lesson from the eagle and the lark." "A toad in a well," says a proverb, "cannot see the whole heavens."

For myself, I must say I fear that if our materialists have their way, and a good education comes to mean knowledge solely for its own sake, obtained by industrious habits of vivisection, I say, I fear that we shall gradually go back to a state of society resembling that of the eighteenth century, as described by Mr. Lecky. Writing about the low state of morals and the degraded tone of mind of those days, he says : "In very few periods of the world has there been so little religion, zeal, active loyalty, or public spirit ; the philosophy of Locke, drawing our ideas mainly, if not exclusively, from external sources, was supreme amongst the stronger minds. In literature, in art, in speculation, the imagination was repressed, and strong passion, elevated motives, and sublime aspirations were replaced by critical accuracy of thought and observation," &c., &c. Perhaps instead of "accuracy of thought," we shall have to substitute the phrase "habits of accurate anatomization," but the results will probably be the same in kind, however much worse in degree.

Instead of the doctrine that all knowledge should be acquired when and where it is possible, the truth is that much knowledge is degrading to acquire, and still more degrading to possess. If the knowledge-at-all-costs seekers are right, every variety of rascality should be known. An axiom in philosophy says, "The only way to know is to be." For instance, the only way to know the taste of a peach is to taste one; or, the only way to know the meaning of "gratitude" is to be or have been grateful. So, also, the only way to know scoundrelism is to be or have been a scoundrel. Thus if our knowledge hunters are consistent, they must say that personally to go through every species of rascality and cruelty, vice and wickedness, is not only allowable but admirable. Is it not knowledge? Well, it would not surprise me. Nothing would surprise me from the lips of a thorough-going materialist, who teaches that a man is but an automaton, and therefore not responsible for his actions, and that right and wrong are mere words to indicate whether the wheels and cranks of this automaton are in good or bad working order.

There was a good article in "Truth," for October 4th, 1877, about, what it called, the "medical trade-unionism" shown in the matter of refusing to admit women to medical degrees; about (to quote the words themselves) the deplorable extent to which merely scientific pursuit is superseding the *human* objects of the profession, and about the way the physiological and medical science of the day is threatening to train up in the midst of us a rather pure breed of devils. What the result might be nationally of a state of preponderating diabolism, cannot be foretold, for it is a new experience in the world. Great nations, such as Rome and Babylon, have often come to an end, but it has been from preponderance of the world and the flesh—luxury, idleness, riches, pride, ostentation, sensuality, &c., but the devil remains to be tried. A heart-

less intellectualism "without natural affection," soulless, conscienceless, cold-blooded and cruel, has never been at all general in any country. Perhaps, indeed, it could only grow up in somewhat northern regions which favour passionless analyzing and reasonings. "The cold in clime," says Byron, "are cold in blood."

Vivisectors say that if Government, out of humanity, prevents animals being crucified and kept in agony for days under the knife, it ought, in strict logic and analogy, to prevent fishes being caught, rabbits and partridges being shot, vermin, weasels, mice, rats, reptiles, and vipers killed; and wasps, earwigs, spiders, bugs, and fleas destroyed. These they actually seem to think analogous cases.

What strange ideas of analogy, likeness, and similes some people have! Everyone has, of course, heard extremely ridiculous ones, but the only one I can think of approaching the above in absurdity, is one of Artemus Ward's, when he is sentimentalizing over the remembrance of the bygone years of his courtship, and says, "I'm in the sear and yaller leaf now, but I don't forget the time when to squeeze my Betsy's hand would send a thrill through me like falling off the roof of a two-story house." Now this likeness is an utterly absurd one, but then the writer intended it to be absurd. To be absurd was his profession. But our vivisectors make the above comparison and draw the analogy in all sober seriousness, and they quote these instances as if they really believed them to be cases in point.

There are several kinds of confusion, but the usual ones are confusion from natural stupidity and the confusion from bias which causes blindness. The above is, doubtless, an instance of the latter kind of confusion. It will, I know, be denied that anybody has ever talked such folly or drawn such absurd analogies, and yet the folly has

been talked and the analogies have been drawn by very eminent, and even justly very eminent, men. Mr. Huxley actually expressed his belief, in the "Fortnightly Review," that if vivisection is put down on account of its cruelty many other things will have to be abolished also; that "crime must go unpunished," on account of the suffering punishment would cause the thief or murderer; "that there will be no means of transport, except steam engines and bicycles, "for the torture caused to beasts of draught and burden will be insufferable;" that no man will eat meat, from the cruelty of killing animals; that it will be unjustifiable to kill fleas merely for the benefit of mankind; that sport will have to be abolished, and that wars must cease, if only because of the torture to horses and mules that are used in war, "to say nothing of the indirect dyspeptic sufferings of vultures and wolves which are tempted by our wickedness to overeat themselves." And all this stuff Professor Huxley actually puts down on paper in so many words !!

After all, I really think that upon this question of vivisection no one has amused me so much as Mr. Huxley, in this article of his written to the praise and glory of the practice; but I was grieved to see, when I read it, that he does not take a hopeful view of England's future. In fact, the latter part of the article is given up to sad forebodings about the destiny of our country. And what are the grounds for these forebodings? Are they political? Does he foresee that we are likely to undertake more responsibilities in eastern countries than we shall have strength to bear? Does he fear, with Mr. Greg, that socialistic doctrines and trade unions amongst the labouring classes are dangerous "rocks ahead," and that the comparative cheapness of labour in some foreign countries will ruin our manufactures? Or are they more moral and spiritual rocks that we are to split upon? There are

those who look with dismay upon what they think the decline of religious faith amongst us, and who fear that if the foundations of national morals are broken up by the removal of the old beliefs and religious safeguards, all motive for virtue and right conduct will be taken away, society will no longer hang together, and destruction will come upon the country. Are these, then, the causes of Mr. Huxley's lamentations? Are these the forebodings that weigh upon his soul, so that there is nothing for him to do but to lift up his voice and weep over the degeneracy of modern times, and the hopelessness of the future lookout? No, it is nothing of the kind. Mr. Huxley's reason for thinking that England's sun has set is that public opinion no longer permits anatomists to cut up live cats and dogs without limit, without check, and without remonstrance, as they have hitherto been accustomed to do.

One laugh more at an illustrious M.P. and I have done with the unsavoury subject. This distinguished man, holding forth against the abolition of vivisection, said that it was no use stopping it in England, for it would go on just the same as ever abroad—in fact, he used the same argument that was formerly used against the abolition of slavery in the English colonies. This brilliant legislator is like Mr. Fagin, the celebrated instructor of youth and receiver of stolen goods. Mr. Fagin always defended himself by saying that if Mr. William Sykes and other burglars did not bring their spoils to him they would only take them elsewhere.

But is it so certain that vivisection will always be carried on in the civilized continental countries? Not long ago a vivisector was hooted out of Florence by the general public. Public feeling in all countries is very apt to be right feeling.

The contents of the foregoing pages have been put into

a light, or, some may say, even a frivolous form. But it is only the form. The medical and scientific fashions and follies of the day have of course amused me; but mere amusement is a passive state, and does not lead to action. What has inspired me to write this book has not been amusement, but indignation at wrong, and pity for the misery caused thereby—indignation red-hot and righteous against wrong-doing, quackery, ignorance, superstition, folly, and cruelty, disguised under the name of science; a word that ought to represent humble, reverential, self-devoting search into the wonders of God's creation, but really at the present day threatens to represent only an insane, self-seeking, self-glorifying pursuit of knowledge of any kind and at any cost, regardless of the sole use of knowledge—namely, the benefit and happiness of mankind.

I know it will be said, as it has been said by one or two foolish people, that I am an opponent of the cultivation of the physical sciences; but I am nothing of the kind. I am only an opponent of the charlatanry, godlessness, self-conceit, fatalism, pessimism, shallow guesswork, and groundless assumptions of the third-class scientist of the day—the merely negative and destructive analyzer, the man who is primarily a doubter, "*wer stets verneint*," as Goethe describes the spirit of evil; and instead of condemning the *real* science of the day, I look on it as a necessary condition of that sort of ideal millennium for which it is human nature (of the nobler kind) to hope; when (again to repeat my quotation from Bishop Thirlwall) "the manifestation will become clearer and clearer of a loving will and a reign of law, beauty, and goodness gradually prevailing in the midst of apparent lawlessness and confusion, and culminating in a kingdom of God on the earth;" though of course the material science itself no more means "beauty, goodness, and the kingdom of

God on the earth" than a good stomach means "rejoicing in the Lord always," or a good fiddle means lovely music.

The healthier the circulation of the blood and the higher the *bodily* condition, the higher is it possible for *spiritual* excellence to rise. It will be the same, we have reason to hope, with the march of the physical sciences. In proportion as by science what are called the laws of nature become known, the obstacles to the spread of the knowledge of these laws removed, circulation and intercourse between different countries rapid, and thus the material condition of the peoples who inhabit them improved, in like proportion we may expect "lawlessness and confusion" to vanish, and beauty, wisdom, goodness, and happiness (or the kingdom of God) to prevail on the earth. The special gifts of special nations of men will be opened out to the world, and all mankind will gain by the genius of one race, the art of another, the wit of another, the wisdom of another, the mechanical ingenuity of another, the religious insight of another, and the practical energy, justice, and governing capacity of another. Now little of all this could happen without the cultivation of the natural sciences, and when I say natural sciences I do not mean theories, guesses, and flashy expositions of popular lecturers and itinerant rhetoricians, but I mean real cultivation of real science.

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